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Special Articles

THE PRINCIPLES AND RESULTS OF MY TREATMENT OF TUBERCULOSIS

By Dr. FRIEDRICH FRANZ FRIEDMANN, of Berlin.

Your Royal Highness, Ladies and Gentlemen:

I am very proud and grateful to have the privilege of being with you to-day. According to your wish I will endeavor to give you in a few words the principles and the results of my treatment of tuberculosis.

Since the discovery of tuberculin, it became a well known and recognized fact that in the bacillus itself were to be found the antigones—that means the substances which contain or produce the curative bodies. During these last twenty-three years all efforts were therefore directed toward extracting and isolating the effective elements with different methods, by chemical, thermic, mechanical and biological proceedings. But all previous methods for the preparation of remedies for tuberculosis originated from toxic virulent bacilli of the human or bovine tuberculosis, and in spite of all efforts nobody succeeded in removing the virulence and toxicity of these cultures. Consequently, it often occurred that the various tuberculin had a damaging, or at least, endangering effect upon the patients. Besides, these incisive measures damaged the very deli-

cate and easily destructible antigones. Therefore arose the task of finding a substance which would prove absolutely harmless, even in big doses, and which contained, if possible, all specific properties of the bacillus, excepting its toxicity and virulence. It therefore had to be an avirulent and atoxic bacillus. But one more thing had to be accomplished and that was that this avirulence, this lack of pathogenic qualities, should not be acquired by any incisive procedures on the cultures, or by chemical additions. There had to be found a bacillus of natural avirulence, and it had to remain avirulent and atoxic in the tubercular as well as in the non-tubercular individual.

Inasmuch as it is natural that every method of deadening the bacilli, even the mildest, alters the finest molecular structure of the bacillus, it followed that only a LIVE bacillus could be used. The qualities necessary for such remedy had therefore to be as follows:

It had to consist of genuine live bacillus which had remained intact from all additions and alterations, and had to be of natural and complete avirulence and atoxicity.

* Address delivered at the Thirteenth Annual Convention of the Canadian Association for the Prevention of Tuberculosis, Ottawa, March 12, 1913.

In former years I used human tubercle bacilli, which had been rendered avirulent artificially. But I discarded this method completely because it was too dangerous and the results gave too little encouragement.

These desired results I obtained immediately when I succeeded in finding a bacillus which originated from a cold-blooded animal, the turtle. This strain of turtle bacilli was originally almost avirulent and atoxic and it lost its last traces of virulence by frequent transplantations. When I had it in that condition (and not before) I applied the remedy to human beings. At first I injected myself with it at different times. After that I gave it to adults infected with tuberculosis, later on to tubercular children, and finally, when the curative effects were found invariably the same, to healthy children of tubercular surroundings for immunizing purposes.

I have found this remedy harmless whenever I used it for patients from the earliest childhood to the most advanced age in all forms of application—subcutane-

ously, intramuscular and intravenous—even in big doses, and equally efficient in all forms of tuberculosis, pulmonary, bone, joint, glandular and skin. Aside from absolutely hopeless cases, whose fates were already sealed, the remedy has proven its efficiency in most instances.

To obtain the ideal, to eradicate tuberculosis as an endemic disease, it is necessary not only to cure the tubercular individuals now living, but also to protect the future generations from this infection, by a method following in principle Jenner's vaccination. So far, I have vaccinated 350 children varying in age from one hour to three years. Most of these children were living in tubercular environments and much exposed to infection from this source. The earliest immunizations were made seventeen months ago and all children are well to-day and are free from all symptoms of serofula or tuberculosis.

There is a well founded hope, therefore, that this will prove the right way, and the one to which our future efforts will have to be directed.

I thank you.

ADDRESS BY THE PRESIDENT, THE HON. ADAM BECK

Your Royal Highness, Ladies and Gentlemen:

On behalf of this Association, I desire to express our great appreciation of the deep interest which Field Marshal, His Royal Highness, the Duke of Connaught, has always taken in our work, and to have the honor of extending to him the hearty thanks of this Association for his presence here to-day.

It has been a wonderful stimulus to those interested in this great movement for the suppression of tuberculosis, and the relief of those suffering from this disease, to know that his late Majesty King Edward VII. was closely identified with, and did much for this noble work. His Majesty King George V. is also deeply interested, and we have been fortunate indeed in having the sympathy and active co-operation of his Royal Highness, the Duke of Connaught, who has honored us by his presence.

You are to be congratulated also on having in your midst such a public spirited and philanthropic citizen as the Hon. Geo. H. Perley, whose generous gift of a new Sanitarium, which is to be formally opened by His Royal Highness, the Governor-General, this afternoon.

There are, however, more centres needing just such examples as are to be found in Hamilton, Ottawa, and London, and I deem it one of the great functions of these annual meetings not only to educate, but to help overcome the apathy of the public in these highly important and most vital matters.

The London Health Association, of which I have the honor to be president, has now reached its third milestone, and the occasion offers an opportunity for a retrospect of what has been accomplished during the three years of active work in the effort to stem the progress of that enemy of humanity—tuberculosis. An in-

*Canadian Association for the Prevention of Tuberculosis, Ottawa, March 12th, 1913.

creasing number of patients, as indicated by the Medical Superintendent's report, is evidence, not that the disease which this Association is organized to combat, is increasing, but rather that the up-to-date and scientific methods which the Association has inaugurated at the Queen Alexandra Sanitarium at Byron, and by the subsidiary organization, the Woman's Sanitarium Aid Society, the Visiting Nurse, and the Victoria Hospital Ward for Consumptives, are becoming established, in public confidence, and the benefits of which, in the arrest, and, let us hope, in the eventual elimination of the disease, are being more generally recognized.

The cities of London and St. Thomas and the Counties of Elgin and Middlesex contributed towards the establishment of the Sanitarium. The London Health Association maintains the indigent patients from these municipalities at 50 cents a day, and with the Government grant of \$3 a week, and private subscriptions on the part of charitable people we maintain our institution without any special appeal for help from the citizens at large towards maintenance.

Thanks to the co-operation of the Hospital Trustees of the City of London, we found accommodation for the apparently advanced cases under observation. They set aside a ward and a sun-room where these cases might be comfortably housed and scientifically cared for. Then we had in mind an institution that would serve as a farm colony that could be reached by the street railway, so that patients could go to the institution in the evening, have a good meal at night and a bed in the open air, a good breakfast in the morning, and go back to their work in the day, and in that way receive the benefit and training and education that could be obtained in no other way. Then the Visiting Nurse was secured, and we had the co-operation and the work of the Hospital Trustees again in that, and a dispensary was placed at our disposal, where the physician in charge of the Sanitarium, together with the visiting nurse (also employed by the London Health Association), examine all patients there, free of charge, on Tuesday and Thursday afternoons of each week at 3 o'clock. We have our own doctor, the medical superintendent of the

Sanitarium, placed in charge of the ward at the hospital.

The visiting nurse was given access and every opportunity to perform her work in the dispensary during the hours allotted to her, and in this way we have economically and fortunately solved the problem of taking care of the man, woman or child who still has to work and who still has to provide for their families and their homes.

The visit of their Royal Highnesses the Duke and Duchess of Connaught to the Queen Alexandra Sanitarium on the occasion of their presence in London, was, though brief, a red letter day in the history of the institution. Their Royal Highnesses freely expressed their admiration of the provisions made at the Sanitarium for dealing with tuberculosis.

The Woman's Sanitarium Aid Society has been most active during the year, and their labors have aided much in minimizing the distress that is so often consequent upon the removal of the bread-winner to the Sanitarium. The work of the same faithful band has also helped most effectively in bringing relief to those whose circumstances, physical or otherwise, prevented their taking advantage of treatment at the Sanitarium. The out-door work thus performed brought the methods of preventing infection to the attention of many otherwise uninformed or indifferent.

This society is now undertaking the erection of a Preventorium and Out-Door School for children at the Sanitarium. This addition to our institution will make it possible to treat incipient cases at a time when preventive treatment counts most and not only to continue the school work of the children, but also to educate them in the laws of health. We expect the Board of Education of the city to supply a Public school teacher for the out-door school.

I believe we should have many such institutions; that they should be local institutions, and that the educative effect of these institutions would be greater than any work of one institution.

May I be permitted to say a word or two in connection with the position, and stand the Province takes in the work of caring for the tuberculosis patients of this Province, although that will also be more

fully discussed by our chief health officer during this convention.

The Ontario Government is assisting very largely to combat the disease and to help those who are earnestly endeavoring to cope with this great question by its maintenance and other grants towards local institutions. We feel that this is a work that should be undertaken by people who are charitably inclined, by municipalities assisting such organizations, and by the Government doing all in its power, by educational ways and means and by financial assistance, to institutions that may be established by charitable organizations.

I may say that although the preparation of our programme was somewhat more hurried than usual owing to the presence of Field Marshal His Royal Highness the Duke of Connaught, yet it is a notable one. It has been our intention of having a representative of the British Government over to tell something of what they are doing over there in way of legislation, but Mr. John Burns cabled that it was with "much regret that he was unable to make arrangements."

It is with much pleasure that we have with us Dr. Friedmann, who will be in-

troduced to this convention, and who will, later on, demonstrate before the medical profession his methods of treatment. We welcome him as a scientific laboratory worker of distinction, as one who, even though unsuccessful in securing all the results we may hope for, is a man working along original and scientific lines.

We also welcome him as coming from that great nation which gave to the world Robert Koch and many other distinguished scientists, and wish with him that his utmost hopes may be realized for this treatment.

Our society welcomes progress and advancement, whether in the best methods of prevention, or those of treatment, for they are in this disease so interwoven as to be almost inseparable for the attainment of the best results.

In conclusion, Ladies and Gentlemen, let me take this opportunity of thanking all those members of our Executive Council and others for their hearty support and co-operation during the past year, and let us look forward with hope to the time when tuberculosis, that great source of sorrow and suffering and loss, may happily become a thing of the past.

WHAT THE DAUGHTERS OF THE EMPIRE ARE DOING TOWARDS THE PREVENTION OF TUBERCULOSIS

MRS. ALBERT E. GOODERHAM,

President of the Imperial Order of the Daughters of the Empire.

May it please your Royal Highness,

Mr. Chairman, Ladies and Gentlemen:—As president of the Imperial Order Daughters of the Empire I deeply appreciate the honour of being invited by the Canadian Association for the Prevention of Tuberculosis to tell you what the Order is doing to help stamp out the White Plague in Canada, and also for its prevention. The aims and objects of our Order are many, just here I will only mention one, that is, to stimulate and give expression to the sentiments of patriotism which bind the women and children around the throne and person of our gracious and beloved Sovereign.

The Order was organized just about the close of the Boer war, and the first work undertaken was to raise sufficient money to permanently care for the graves of our brave sons who gave their lives for Queen and Empire, whose last resting-places are so far away from home and loved ones. After that was accomplished, thanks be to God, we have since been living in times of peace, and there has been no further need of such work, but we have awakened to the fact that many lives are being sacrificed by an enemy as relentless and more assiduous than that of war, which is threatening our national health, that is Tuberculosis, and the Daughters

of the Empire have joined the ranks of those who are fighting the battle against it.

It would be impossible to report in detail this branch of our work, but briefly let me say, to Mrs. P. D. Crerar belongs the honor and credit of taking the first steps in this noble work. The Municipal Chapter of Hamilton, of which Mrs. Crerar is Regent, in 1904 furnished a ward of eight beds in the Free Sanitarium at Gravenhurst; later in the same year a pavilion was built, two beds were added and placed with the others, in what was then known as the "Hamilton House." Upon reporting this work at the annual meeting of the Order Mrs. Crerar made a strong and forcible appeal to make the stamping out of the White Plague one of our first aims. That the appeal was successful I may say that "to forward every good work for the betterment of our country and people" was added to the aims and objects of the Order, under this clause this branch of our work has been carried on.

From 1904 down to the present time the Municipal and Primary Chapters in Hamilton have worked and are still working steadily in the campaign against this disease.

In 1905 several beds for children were established at the Weston Sanitarium by various Chapters of the Order. In the same year the Toronto Chapters furnished two wards in the free Sanitarium at Weston, for children; this, I believe, was the first provision made in a sanitarium, for little ones, so affected; it was a small beginning, but as

"Large streams from little fountains flow
Tall oaks from little acorns grow."

so the work has grown; five years later, after the fire at Weston, on December 7th, 1910, the President, Mrs. Nordheimer, called a meeting of the Daughters of the Empire at the King Edward Hotel, where Mr. Gurney, by our request came and told us of the great need of a Hospital for Children. We resolved at that meeting to assist in raising the money, with the understanding that the hospital was to be erected in memory of our late beloved King Edward VII. (Just here I wish to say that this part of our work, especially that of caring for the children, was very

dear to our late President's heart). We notified the National Sanitarium Committee of our resolution and began work. We were informed later that the committee had decided to start a campaign to raise "a Million Dollar Fund" for the work at Weston, including the Queen Mary Hospital for consumptive children, to be called the King Edward VII. Memorial Fund; that the undertaking has been successfully accomplished is now a matter of history.

In 1906 the Vancouver Chapters undertook to help the Anti-Tuberculosis Society in that city.

The Kingston Chapters began their work six years ago by equipping one or two small shacks, later on several tents were furnished, and the outcome of their efforts is shown in a hospital for tuberculous patients which is now completed and called "The Oliver Mowat Hospital." The U. E. Loyalist Chapter in Napanee is also working for this hospital.

In 1907 the Chapters in London helped to the extent of \$1,000 towards the furnishing of the Queen Alexandra Tuberculosis Hospital.

The Laurentian Chapter, Ottawa, gave ten thousand dollars towards the building fund of the "Lady Grey Hospital," and six thousand three hundred and forty-six dollars towards the furnishing, besides this seven rooms were furnished by individual members of the Chapter, also one thousand dollars to the Anti-Tuberculosis Association and six hundred to the May Court dispensary.

In the year 1908 St. Catharines Chapter, St. Catharines, decided to work for a tuberculosis hospital. A site was secured and a splendidly equipped hospital is now in operation.

The Border Chapter, Windsor, commenced in the first year of their organization to raise funds for the erection of a Tuberculosis Sanitarium. A very suitable property has been secured, plans approved and when the sanitarium is completed will be a striking evidence of what can be done with courage and perseverance; the Chapter is now busy raising funds to furnish the Sanitarium.

In a five days campaign organized by the Fort Garry Chapter in Winnipeg, the sum of eleven thousand, two hundred and seventy dollars was realized, and a cottage

known as the "King Edward Memorial Cottage" has been erected at Ninette for tuberculous patients.

The Order all through the West as far as the Coast is doing much to help stamp out the White Plague, and the same may be said of the Eastern Chapters. In the smaller towns where there are no hospitals for tuberculous patients, much time and assistance in relieving individual cases is given.

Mention may also be made that many Chapters of the Order have since the year 1904 sent contributions to both Gravenhurst and Weston Sanitariums.

For four consecutive years Christmas stamps, issued by the National Sanitarium Association for the benefit of the Free Sanitarium at Gravenhurst, were sold by the Chapters throughout Canada.

We all agree that this is a splendid and necessary work, too much cannot be said in favor of it. The Sanitarium is a necessity in the cure of the early cases, the segregation of the advanced cases, medical research, and lastly, and very important, the education of the patient who later goes to his home and preaches the doctrine of health.

It has been found by those who make a study of the disease that if we are to be successful in stamping it out we must begin earlier, and now we have these associations formed to make a study of prevention as well as cure, and we realize it is in preventing the development of the disease in children, that our greatest hope lies, and the Daughters of the Empire have taken up this branch of the work also.

Hamilton is in the proud position of being first in the field again, owing largely to the work of the Chapters there, they not only established the first local sanitarium, but erected the first Preventorium for Children in Canada.

I must leave the Daughters of the Empire for a while and renew your acquaintance with an organization in Toronto known as the Heather Club, formed by the graduate nurses of the Alumnae of the Hospital for Sick Children. There is no need for me to tell you about the organization or work of this club, as the President tells me it is well known to you, and has been reported upon each year for the last three years. I may say, however,

that with the co-operation of the Health Department, the enforced registration of cases and organization of school inspection, the work has more than doubled itself. There were 2,117 visits paid to the clinic last year, 372 being new cases.

In connection with this Social Service work Mr. J. Ross Robertson built a pavilion on the lawns of the Lakeside Home at the island for the use of the Heather Club children from May to October. The first year 31 children were sent over, the second year 73, the third year 100 children enjoyed the fresh air and freedom of the Island, and were materially benefited. In almost every case the little ones gained steadily during their stay; in some cases where the children returned to their unhealthful homes—for instance, some are now living in damp cellars—they went back again, and the nurses and doctors realize that a number of the children must be removed from their unsanitary and objectionable surroundings, if permanent results are to be obtained. The Heather Club's activities having reached this stage the members realized that if they were to keep up with the growing needs they must have a permanent home, and began to look around for a fresh friend who would come to their assistance. Having learned from the report of the Canadian Association for the Prevention of Tuberculosis that the Daughters of the Empire did more preventative work in Canada than any other body of women they decided to enlist the sympathy of the Daughters in Toronto, and waited upon the president, and asked if the members in Toronto would provide such a home. To consider the question the officers of all the Primary Chapters were called together, the Municipal Chapter was formed, the Heather Club was asked to join the Order as a Chapter and consented. They did not require much persuasion, as the president said "We are all Daughters at heart anyway," (and let me say here how gladly we welcomed this noble band of women with their splendid record of work, into our ranks). At that meeting it was resolved that the Daughters of the Empire would work for the prevention of tuberculosis in children, the Heather Club Chapter to continue their Social Service work of following the children from Clinic

to their homes and providing them with necessary nourishment, clothing, etc., and joining the other Chapters in working for the Preventorium.

(This year's report of the Heather Club will be embodied in the Annual Report of the Canadian Association).

Just here I should like to pay tribute to the work done by the Heather Club with the assistance of Mr. J. Ross Robertson and the doctors in the past three years. From now on the work of the Heather Club will be embodied in the work of the Municipal Chapter in Toronto, adding to the successful work already accomplished.

Soon after our Municipal Chapter was formed we began organizing for our Preventorium, to work in connection with the Toronto Board of Health, the Social Service Work of the Heather Club Chapter, the Clinic of the Sick Children's Hospital, and the Heather Club Pavilion at the Island. I wish to make it clear that the Preventorium is not a thing apart, but a part of the whole scheme; that it is urgently needed, I may point out for example that there are three children attending clinic who, with their father and mother, are living in one miserable room; the mother has tuberculosis, she should be at a sanitarium, but she cannot leave the children. Again, a mother died of tuberculosis leaving four children, all attending clinic, the Heather Club Chapter is paying \$3.00 a week each for their care, all these little ones need mothering and will be taken to the Preventorium with twenty-five others who are already waiting for the opening.

For the Preventorium we have appointed a board of managers, all members of the Order, ladies with many home and other duties, a staff of doctors, specialists, all very busy men with three clinics a week on this work alone; an advisory board of experienced men, and engaged a matron, head nurse and nurses, a man and wife as gardener and cook, and the usual staff of household help. To successfully carry on this part of the work, and as the little ones must attend the clinic, it is obvious that we could not go far from the hospital or homes of the ladies and doctors, who must visit the home frequently to supervise and direct. With the as-

sistance of an interested friend we were fortunate in being able to secure just what we needed, a well-built brick house with splendid broad upper and lower verandahs which will make ideal sleeping accommodation for sixty children, thirty boys and thirty girls. With the necessary alterations, such as warm dressing rooms and bath rooms, lockers for each child, dining room and school room, the latter almost entirely of glass, both facing the south, isolation wards, and all other necessary rooms and conveniences, grounds sufficiently large and open for playgrounds and gardens. We will have everything necessary to carry on the work, all the Chapters contributing toward it. We have all the necessary furniture, contributed by friends interested in the welfare of the little ones, and now as to maintenance. I do not need to tell you we will require all the assistance and help of our generous supporters of the past to carry on the increased work. It will be costly, we have every reason to believe we will receive the Provincial and Civic grants, but that will not be sufficient to meet the needs. We have now eleven friends who have each undertaken the maintenance of a cot at \$100 a year; some Chapters are to maintain cots to be named after their Chapter, (the "Lord Nelson," "Dreadnought," "Sir John A. Macdonald," "Chateauguay," "Sir George Kirkpatrick,") and other Chapters working hard to raise money for the maintenance. We are looking forward with courage, and believe that we will receive sufficient support to carry on this worthy undertaking. I am happy to say we have the unanimous consent of the local and Provincial Boards of Health, and hope before long to report that the missing link in the chain of the preventative work of the Clinic of the Sick Children's Hospital, the Social Service work of the Heather Club Chapter, and the Island Pavilion, has been completed by the Daughters of the Empire Preventorium.

On behalf of the Order I may say that we feel repaid for our efforts in that they have been sufficiently recognized by our being asked to give a report to this very important organization. If we succeed in helping to stamp out this disease in our country we will have had our reward.

We also feel that it is a truly patriotic work, in our Preventorium we will not only help make the little bodies strong, but minister to the mind and soul as well, as we hope to create the atmosphere of a

real Christian home, endeavoring to live up to one of the most cherished ideals of the British Empire—"For God, my Country and my King."

FIRST ANNUAL REPORT OF THE JUVENILE COURT

By J. EDWARD STARR, Commissioner.

With the enactment in A. D. 1893, of "The Children's Protection Act of Ontario," coupled with some amendments subsequently secured to the Criminal Code of Canada, youthful offenders against the law in this Province were given the right: (1) to detention apart from adult offenders; (2) to separate trials, and (3) to the presence, as their friend at Court, of the agent of the Children's Aid Society.

Later, under the same Act, there was established in Toronto, with Police Magistrate Denison presiding, "The Children's Court"—the first to be established upon this continent, though similar Courts were already in existence in Australia.

What advantages this Court had over the old police court methods of dealing with youthful offenders—what opportunities of recovery it brought to them, as well as help and comfort to their anxious parents owing to the consideration and kindness of the presiding magistrate—only those familiar with its working will ever know—only Eternity disclose. Enough to say, that the statutory enactments which made possible the establishment of "The Children's Court" marked a great advance in social welfare legislation, so much so they led the way, beginning with Chicago and Denver, for legislation on behalf of offending boys and girls throughout the States of the neighboring republic.

But a greater advance in Social Welfare Legislation of Canada is that marked by the enactment of 1908 of the "Juvenile Delinquents' Act."

The Juvenile Delinquents' Act.

is a Federal law—a statute passed by the Parliament of Canada and declared by experts to be the best of its kind so far in

the world—only it is not brought into force except on the certificate of the Attorney-General of a Province that a municipality has requested it and made provision for the necessary machinery, and then, through an Order-in-Council at Ottawa, and proclamation in the "Canada Gazette." Once it is brought into force, youthful offenders against the law, under its provisions, are no longer branded as "criminals" nor characterized as "convicts"—to have to face that record, perhaps, in after life for an indiscretion of youth; they are simply juvenile delinquents. A juvenile delinquent, under the statute, is any child apparently or actually under the age of 16 years, who "violates any provision of the Criminal Code or of any Dominion or Provincial Statute, or of any by-law or ordinance of any municipality, for which violation punishment by fine or imprisonment may be awarded, and

"When any child is arrested, with or without warrant, such child shall, instead of being taken before a justice, be taken before the Juvenile Court; and, if a child is taken before a justice, upon a summons or under a warrant or for any other reason, it shall be the duty of the justice to transfer the case to the Juvenile Court;"

At the same time, "No child pending a hearing under the provisions of this Act, shall be held in confinement in any county or other jail or other place in which adults are or may be imprisoned, but shall be detained at a detention home or shelter used exclusively for children;"

And, "No juvenile delinquent shall, under any circumstances, upon or after conviction be sentenced to or incarcerated in any penitentiary or county or other jail or police station, or any other place in which adults are or may be imprisoned;

"Nor shall it be lawful to commit a juvenile delinquent apparently under the age of twelve years to any industrial school, unless and until an attempt has been made to reform such child in its own home or in a foster home or in the charge of a children's aid society, or of a superintendent of neglected and dependent children, and unless the Court finds that the best interests of the child and the welfare of the community require such commitment."

On the other hand, the Juvenile Delinquents' Act, besides legalizing probation, gives to the presiding magistrate much wider powers than are given to a magistrate under the Criminal Code, viz.:

"In the case of a child proved to be a juvenile delinquent the Court may adjourn the hearing from time to time for any definite or indefinite period, and may impose a fine not exceeding ten dollars, or may commit the child to the care or custody of a probation officer or of any other suitable person, or may allow the child to remain in its home, subject to the visitation of a probation officer, such child to report to the Court or to the probation officer as often as may be required; or may cause the child to be placed in a suitable family home as a foster home, subject to the friendly supervision of a probation officer and the further order of the Court; or may commit the child to the charge of any children's aid society, duly organized under an Act of the Legislature of the Province and approved by the Lieutenant-Governor in Council, or, in any municipality in which there is no children's aid society, to the charge of the superintendent of neglected and dependent children for the province, if one there be, duly appointed under the authority of any such Act; or may commit the child, if a boy, to an industrial school for boys, or, if a girl, to an industrial school or refuge for girls, duly approved by the Lieutenant Governor in Council."

Not only so but "in every such case it shall be within the power of the Court to make an order upon the parent or parents of the child, or upon the municipality to which it belongs, to contribute to its support such sum as the Court may determine."

a power which comes as a great surprise to parents, who, on the excuse that their

children are beyond control, seek to load them off upon the community, and which, with other power, enables the work for neglected and dependent children under the Provincial Statute to be carried on hand in hand with the even more important work for juvenile delinquents under the Federal Statute, while the spirit in which the work is to be done and law enforced is breathed in the language of section 31:

"This Act shall be liberally construed to the end that its purpose may be carried out, to wit: That the care and custody and discipline of a juvenile delinquent shall approximate as nearly as may be that which should be given by its parents, and that as far as practicable every juvenile delinquent shall be treated, not as a criminal, but as a misdirected and misjudged child, and one needing aid, encouragement, help and assistance."

But there are other powers under this Act vested in the presiding magistrate—powers about which perhaps the public ought to be better informed. Section 30 provides that:

"Prosecutions against adults for offences against any provisions of the Criminal Code in respect of a child may be brought in the Juvenile Court without the necessity of a preliminary hearing before a justice, and may be summarily disposed of where the offence is triable summarily, or otherwise dealt with as in the case of a preliminary hearing before a justice."

a provision under which a child, called as a witness, may be frequently shielded from undesirable publicity. So, too, section 29 provides that "any person," whether or not the parent or guardian, who "contributes to a child being or becoming a juvenile delinquent," is guilty of an offence punishable on conviction by a fine not exceeding \$500, or by imprisonment not exceeding one year, or by both—a provision which is found nowhere else upon our statute books. Any person! Tobacco or liquor sellers, theatre or picture show managers, book sellers, lurers of girls, milk dealers, factory owners, employers, guardians, parents—Any person! Yet is it not a logical provision? When penalty follows conviction for the destruction of shrubs in our parks, why should not penalty follow the track of those who,

through selfishness, greed or immorality, are crushing down young lives by contributing to their delinquency—especially when they are delinquent parents! The parents are the chief and vital factors of the home; the home is the right and normal place even for the delinquent child; therefore, to effect juvenile formation—not to say reformation—when other corrective influences are in disuse in the home, absolutely necessary is it to utilize upon the parent the corrective influence of the law. And this provision, not to say the entire Act, is a wonderfully effective whip with which to tan up in delinquent homes the idea of parental responsibility—only the problem is to enforce it with discretion and not to mistake it for a trace chain. Under this Act, then, is organized

The Juvenile Court of Toronto.

In November, 1910, the City Council, on motion of Alderman (now Controller) McCarthy, affirmed the need of such a court, and later, on motion of the same gentleman, having voted the necessary appropriation, requested the executive of the Provincial Government, through the Attorney-General, to appoint a commissioner, as well as to take the steps necessary to have the Act put in force for the City of Toronto. The Commissioner was appointed under Letters Patent, dated December 4th, 1911. On the same date proclamation was issued declaring the Act in force, and about a month later, viz., January 2nd, 1912, "The Children's Court" was superseded by "The Juvenile Court," the same being ultimately located in canvas Chambers set apart in the little used assembly room on the third floor of the City Hall, and organized with the following staff: the clerk, the chief probation officer, two male and two female probation officers.

The Procedure

of the Court is as follows:

Except complaints made under oath, either by police or other officers or persons with the view of prosecuting offenders, all other "complaints" or "troubles" reaching the Chambers are entered on an "occurrence" slip, and the same handed to the Chief Probation Officer, who, having entered the contents in a book for the purpose and numbered it, passes its asser-

tions on to one of the probation officers for investigation, when, as is often the case, following kindly advice or warning, no further proceedings are necessary. If, however, neither the advice nor warning of the probation officer avails, the person complained against is invited to take counsel with either the Commissioner or the Chief Probation Officer in his office, where facing the probation officer's report, matters are usually straightened out. In this way, on the principle that prevention is better than cure, a comparatively large number of these complaints have been adjusted without the necessity of taking them into Court. But these methods failing, or the Chief Probation Officer, after having received the report of the probation officer who investigated the matter, is of the opinion that the fact warrant Court proceedings, and he recommends them, the "occurrence" with accompanying "reports," is transferred to the Clerk and made a "Court Case," when, as in all Court Cases, an "information and complaint" under oath is laid, a summons or a warrant issued, with the necessary subpoenas, and further action transferred to the

Court Room.

The Clerk is an adept stenographer, and all evidence, together with a memoranda of the plea, decision and order, is taken down by her in shorthand, to be afterwards typed, and, with the other papers in each case, placed in a manilla wrapper, stamped with a case number and stood in the filing case. In the clerk's office is also kept a loose leaf index and a case register in the blank spaces of which is entered up each day, after Court, the name in the case, together with the date of hearing, the manner of its disposal, etc. each space also contains the entry of any subsequent case with which the person bearing that name may be connected, and as the case number on the wrapper corresponds with the number opposite the name, both in the index and on the case register, not only is reference easy, but years from now, unless disaster intervene in the shape of fire or otherwise, each step in every case will be on record.

Lawful holidays excepted, the Court sits each week day at 10 a.m., its calendar having run as high as twenty-six cases,

and latterly taken sometimes two and a half hours for its disposal.

As to the Court Room, it is electric lighted and carpeted, while the "Bench" consists of an arm chair behind a long table, at one end of which sits the agent of the Toronto Children's Aid Society, at the other the agent of the St. Vincent de Paul Children's Aid Society, and behind it, on the right and left of the Commissioner, the Chief Probation Officer and the Clerk, the front edge of the table being the "Bar."

When a case is called, only the parties interested—whether alleged contributors or delinquents (with their parents)—are allowed to enter from the waiting room, and, if the plea is "not guilty," then the witnesses, as needed, when, if the case is proven, begins the puzzle of

Administration.

Where our Criminal Courts cease their work, the real work of the Juvenile Court begins; their work in a case ceases with the meting out of sentence, whereas, before reaching that point, the Juvenile Court, recognizing that each case must be viewed from the standpoint of the delinquent rather than from that of the adult, seeks to know all about him, for that purpose having a probation officer look up and report on his character, his parentage and home environment and his school standing—in fact, his "whole history," and sometimes even calling in the aid of a mental expert or psychologist. Still there is yet to be determined the way in which best to deal with the delinquent—shall he be fined, or remanded for a few days to the "Shelter"? or fined and sentence suspended? or fined and put on probation? or put on probation without fine? or, if having been on probation, he has fallen down, what then? Take him from his home and put him in another environment, or commit him to an Industrial School? These and other alternatives are brain twisters that every day keep the gray matter of the Court working overtime, and if he would neither shirk his responsibility nor wrong the delinquent, he must steer a straight course between the Scylla of mistaken kindness and the Charibdis or harsh injustice to the pier-head of duty clearly incumbent upon him,

viz., that of endeavoring on the one hand to aid the delinquent to a consciousness of his wrong-doing, and on the other, to an improvement of his conduct.

As Herbert Spencer has said: "The end of all government is the formation of character," and exactly that is the great object of the Juvenile Court—not so much to save property as to save the delinquent—not to do something to him, to punish him, but to do something for him, to enable him to become a self-respecting member of the community, a law-abiding, loyal citizen of Canada and the Empire.

Punishment, whether by fine or imprisonment, has not been the successful deterrent of crime it was designed to be. Were that the case there would be fewer appearances each year in proportion to the population in our police courts, and fewer inmates in our prisons, reformatories and gaols—whereas the contrary is the fact, experts telling us that during recent decades crime has been on the increase, and furnishing statistics to show, not only that the increase has been among the youth of the nation, but also that its inception is to be traced to the waywardness of misdirected boys and girls following the infliction upon them of fines and, particularly imprisonment; in other words, that owing to the severity of this traditional non-Christian system of punishment, we have been manufacturing criminals.

But the Juvenile Act, while permitting fines, and for the purpose of discipline, detention in Shelter and Industrial School not only makes impossible the imprisonment of delinquent boys and girls, but also, with the view of making out of them good citizens, actually legalizes the application to their cases of the principles of love and justice, and for these reasons, the court (unless the delinquency has been flagrant or repeated—when with the sentence always goes the explanation that its object is not to hurt but to help), has been slow to inflict either detention or fine upon delinquents—seeking rather through the probation system, by means of patience, kindly firmness and encouragement, as well as by appeal to their sense of honor, fair play and citizenship—to enable them to recover themselves and "make good" as potential citizens. To that end, wherever possible in cases where the char-

aeter has been assailed or the person assaulted or property "swiped," stolen or damaged, the Court insists upon apology or "making friends," and

Restitution.

Not until the delinquent realizes that the wrong he has done has been righted as far as he can do it himself—not until he realizes his responsibility for the wrong done—is there much use or sense in attempting a cure for the conditions that made the wrong possible, and restitution tans up his sense of personal responsibility both to the law and his fellows as nothing else does, especially if he must go to work in order that out of his earnings, and generally on the instalment plan, he can make the required restitution.

As appears by the report of the Chief Probation Officer, Mr. J. J. Graham, largely for this purpose he secured 674 situations during the year, while the long breath the delinquent takes once the last twenty-five cents is paid; the self-respect revealed in his bearing and laugh; his consciousness of having "made good," his gratefulness to the "friends at Court," and withal the confidences that he unveils of his hopes and aims and ideals—of these am I personal witness—a result which would be unachieved without

The Probation System.

In principle this the power of the State as a kind of over-parent, long used to deal helpfully with minors-at-law, unfortunates and weaklings as its wards. A few years ago, on the adoption of the parole system, it was extended to include certain classes of adults undergoing imprisonment, and, more recently, juvenile delinquents. As applied to the last named, probation is the putting of them on their honor for a definite or indefinite term, under the supervision of a probation officer, who will be a friend to them, and implicitly trusting them. Its object is, not to coddle them—not that at all—but to buttress their weaknesses and build up each individual boy and girl to be strong enough in themselves and in their own character to resist the wrong and do the right, simply because, both for themselves and society, it is the "square thing" to do. For that reason, the weak ones are patiently borne with and in the hope of ultimate success "tried out," and helped, notwithstanding that

temptation proves too much for them, and they make several "slips." On the other hand, the supervision may be made so sharp, the requirements so exacting as to bring probation very close to being real punishment, and, if the wayward delinquent will neither take it seriously nor respond to its clemency, the sooner he is brought up with a "round turn" the better, even if it be to place him in some proper institution.

As W. L. Scott, Esq., K.C., of Ottawa, who drafted "The Juvenile Delinquent's Act," has well said: "Probation is the right arm of the Court." Its efficiency, however, must necessarily depend, first, upon a well organized probation office, and next, upon the personality of the officers, their tact, sympathy, patience and ability to understand the individual probationer. Mere machine methods will not suffice, nor "just anybody" do for a probation officer. To quote again from Mr. Scott: "Unless the probation officer can feel that by his influence he has made a lasting change for the better in the character of the child and left the home and environment in general better than he found them, he cannot claim to have succeeded, even though the probationer has not been returned to the Court for a new offence." In fact, social experts are even now regarding the use of volunteer probation officers as a practice too hazardous to be encouraged, and the assertion is made that Canada must soon have a National Probation Commission, which, through the sifting process of wise rules, up-to-date courses of study and discriminating examinations, will make possible the selection of competent, well-trained probation officers. But as a vital part of the probation system

Our Report Day

is not to be overlooked. When a delinquent is placed on probation, he is furnished with a card printed on one side as follows:

Toronto Juvenile Court—Probationer's Card.

To No. Street

By this court, so as to give you an opportunity to retrieve your character, YOU as a Juvenile Delinquent, are placed on probation for the period of months, under Probation Officer

who is your friend, to help you become a useful, honorable citizen, on the following conditions:

1. That you report promptly as directed on the back of this card.

2. That you be of good behavior, viz.: Keep good company and good hours. Avoid bad habits, and obey your parents in everything that is right, as well as your Probation Officer.

3. That you regularly attend school (unless you have a permit to work), and each week bring your school report to your probation officer. If you have a permit, be prompt, honest and industrious in your work.

4. Remember your Probation Officer represents this Court, a friend whom you can trust, and to whom you can tell any trouble you have.

Remember you are a ward of this Court on your honor to "make good," and if you violate any of the above conditions you can be brought back to Court to be further dealt with.

Your present probation term ends.....
.....191....., and on that date, if you have "made good," as I hope you will, present yourself before me for formal discharge from the custody of the Court.

.....
Commissioner Juvenile Court.
.....191....

On its reverse side is shown the time and place at which he is to report, together with blank spaces for each week of each month in the year, which the Chief Probation Officer initials as the delinquent reports each week. Our report day is Saturday between the hours of 9 a.m. and 1.30 o'clock. If any fail to report they are "looked up" on the following Monday by the probation officers, but the failures are comparatively few—on an average not more than one in twelve, and then seldom through perverseness. The number reporting has run as high as 108 boys, with an average, since April last of 85. Girls report neither at the same time nor place as boys, and then not in groups.

As to the character of these boys, perhaps 25 per cent. were either mentally defective, morally dense, proudly wayward or defiantly lawless; the remaining 75 per cent. being little different from

other average and mischievous boys, only they were "caught" in some violation of the law sufficiently serious to warrant the police bringing them into Court.

On their appearance to report, they are met with encouragement and the kindly interest that seeks to gain their confidence and strengthen their character. No boy is asked or encouraged to "tattle"; if others have been mixed up with him in some "trouble" the suggestion is made that he induce them to come to the Chambers with him to make a clean breast of it and get the help of the Court, otherwise, for their good, if it be a serious "trouble" and in order to do his own duty to the State, he may feel obliged to tell. They are told they are there to prove themselves good boys by helping other boys to be good; that as we accept their word, so they must respect their honor. In the case of some "difficult to manage" they are frequently asked to give some evidence of our faith in them by bringing in a report from either their parents, their teachers or their employers. If some probationer proves himself too weak or wayward to do right and has to be sent to an Industrial School, he learns that it is done in kindness, to help strengthen him or teach him obedience because the law compels it, and he has sent himself there. They are taught that their rights cease where the rights of society begin; that Toronto is their city and they are wanted to make it a splendid city, and upon them is impressed the fact that policemen are their friend rather than their enemies, and that it is their duty to obey law and respect authority and be self-respecting, loyal little citizens.

Upon the adoption of Report Day, boys familiar with police methods were at first disposed to regard it with suspicion not unminged with contempt, and as an easy way of skinning out of trouble if not of "putting it all over" the Court. But a couple of gang-leaders brought up with a round turn and let know that the law was behind it to enforce probation, quickly dispelled that idea, while those lads actually became Court missionaries to their chums.

To illustrate: Last winter a strapping big, 15-year old boy, a "young tough," the police called him, having been put on probation, and a "job" found for him,

went directly back to his fellow gangsters and in their presence tore up his card. In a few hours, of course, it was known at the Chambers, when instructions were given to a probation officer: "Get that boy, if you have to chase him all night, and bring him to Court in the morning." On his appearance he was quietly asked: "Jack, where is your card?" "I've lost it," he brazenly replied. "Steady now, lad, this Court has ways of learning things about which you do not know, and it is always a good thing to tell the truth. What did you do with your card?" "I tore it up," he confessed. "Why?" "I dunno" — just to show off I guess." "Well," was the Commissioner's comment, "I guess that is right, but, Jack, you have to obey this Court. Now which will you do? Go to work and report here, or go to Mimico? You can do just which you please. It is 'up to you.'" "I'll go to work," he answered. "Very well, go into my private office till I am done here, when we will have a talk." At that "talk" his confidence was won and his home trouble and hopes revealed. As for work, he wanted something with "go" in it. That was secured for him and he worked along and "worked up" until for the last three months he has been earning \$12 a week, with every evidence of making a splendid citizen and besides frequently dropping in at the Chambers, he urges other boys having troubles to come with them to the Court.

Perhaps one of the most remarkable features of the Court is the number of boys who either of their own accord or through other boys influencing them, come there now with their "troubles." They are learning we are there to help; in fact, in some cases boys have asked to be put on the list as volunteer probationers, while a good number, without being formally brought into Court, have, at the request of their parents, been placed on probation and ordered to report.

But now, what has been the outcome of it all.

The Work-Out

of the Court? The details are to be found in the tables of facts and figures contained in the report of the Chief Probation Officer, and that of the Court Clerk.

Court cases have been dealt with to the number of 2,068, some of those, for contributing, having occupied from an hour to two hours for the trial. In addition there were 525 "occurrences" that did not come into Court, but which necessitated investigation, personal warning and either settlement or supervision, a total of 2,593 cases involving the interests of fully 3,300 children. Of the number of delinquents placed on probation, viz., 724, over 90 per cent. have made or are making good, and 524 of them neither appeared in Court a second time nor required an extension of their probation term.

Out of the total number of delinquents before the Court, viz., 1,744, including those guilty of offences not considered serious enough to require probation or fined in lieu of it, 1,386 have not appeared a second time, or 79 per cent.

Committals to Industrial Schools totaled 71. Of these 23 had the maintenance made chargeable to either the parents or outside municipalities, leaving 48 in which the maintenance at \$65 a year is chargeable to the City. During the same period last year the commitments from "The Children's Court" to Industrial Schools, with the maintenance chargeable to the City, numbered 123, as against 48 this year, a direct saving to the City of \$5,525, to the Province of \$7,390, and of those 48, upwards of 30 were mental defectives, who, because there is no place else available, were sent to these schools simply to protect them against themselves, when, as a matter of justice, they should not be sent there at all.

Owing to the energies of Officer Levy, the down-town streets have been practically cleared of "weeping Jimmies," the "swiping gangs" in the Ward broken up, and the pocket picking of the big stores stopped. Miss Warburton, the newsboys' teacher in the Elizabeth Street School, wrote before leaving on her vacation:—"You have redeemed our school." Col. James L. Hughes, Inspector of Public Schools, is reported as saying in an interview: "I think more effective results would be obtained if the Juvenile Court dealt with all cases of truancy or delinquency." In his Annual Report this year, Mr. C. D. Johns, Superintendent of the Working Boys' Home, states: "We co-

operate with the Toronto Juvenile Court. . . . our object is to get boys, some of whom have made mistakes, and put them on the straight road in life. Of the boys from the Court, seventy-five per cent. have made good on coming here, and in being given a chance, they are saved from being marked for life." Provincial Secretary H. C. Hammond, of "The Canadian Boy Scouts": "Your recent letters duly received. The youngsters have visited the office and I am doing everything possible for them. The type of lad that you are sending to us fully proves that the Juvenile Court was not introduced in Toronto any too soon, and I am sure that hundreds of parents will bless the day that it was."

With regard to parents, citizens and others who contribute to the delinquency of children: Police and probation officers have utilized the Court against persons found selling them cigarettes and liquor; the truant officers have "used the Court against parents who neglect to send their children to school;" Dr. Struthers, Chief Medical Inspector of Schools, has called for its help in the case of parents omitting, without lawful excuse, to provide for their children necessary medical treatment; officers of the Children's Aid Societies have found it helpful where parents have failed to support their children through drink and immorality, or sent them to the streets to beg or steal, with the result, and to a great extent as the outcome of the press giving publicity to the nature of the "cases" without mentioning the names of the persons involved, a large number of people have been awakened to see that if they will not voluntarily realize their responsibility, it can be enforced by Statute, and scores of homes have been cleaned up, to show a better home life for the children — so much so that the Board of Associated Charities, through Mr. Secretary Arnold, reports: "The Court has already proven itself a great factor in dealing not only with delinquency in children, but with the parents who too often are found to be chiefly responsible for their boys and girls going astray."

As to the cost of the Court: There is cost whichever way the question is viewed, only there is less cost in the manufacture of citizens than in the up-keep of crimi-

nals, and, apart from the saving to the City through the lessened number of commitments, if, to the saving of individual probationers to good citizenship, there be added:

(1) The saving of those unknown hundreds whom the influence of their delinquency, unchecked, would have led into crime; and

(2) The saving in dollars and cents for all future years, through the reduction of criminals and the prevention of crime, the Toronto Juvenile Court has amply repaid its cost.

From the "work-out" of the Court may also be seen some of the

Causes of Delinquency.

Much of it, beyond question, was due to a sordid home environment, but by no means all. Drunkenness and immorality on the part of one or other, or both, of the parents, yielded their own fearsome share; some parents were proven to have sent their children to the streets to beg or steal, or been indifferent to their practice of disgusting habits, or lived shamelessly in their presence.

Nor have moving picture shows and automobiles failed of their quota. The possibility of a "joy ride" in the latter seems a temptation strangely alluring to the romantic, thoughtless young girl of neurotic temperament so much so that upwards of twenty yielded to it (several of whom confessed to having invited themselves to go) without even knowledge with whom they were going—otherwise the chauffeur would have been before the Court for "contributing." As it is, through the complaints of the parents or guardians that they had run away or been keeping late hours, or deceiving about being at work, the girls, with the exception of two, for whom we are still searching, were all reached or found and dealt with, only to discover what should be a red warning light to foolish young girls against taking "joy-rides" with scoundrels, viz., that nearly all of them, having yielded to lust, had become, if not victims of venereal disease, the subjects of almost irretrievable consequences to themselves.

As to the moving picture shows: One outbreak of revolver "swiping" was directly traceable to them. Numbers of boys have confessed to stealing or pocket-

picking to obtain the entrance price, and both boys and girls have told how they "was helped to get in" by unknown "adults" in violation of the law; while the pavements adjoining the entrances to these places, especially at corners in the outlying districts, have been shown to be the breeding-places of disorderlies. Certainly the law regarding them should be amended to the extent of qualifying the word "adult," otherwise it will remain what the police claim it is: A means of evading the law to rake in the juvenile nickel. In fact, what with the disorderliness they have been shown to occasion on the outside through half-grown boys and even girls congregating adjacent to them, to use profane and lewd language and annoy pedestrians, on the one hand, and, on the other, the number of censored pictures still shown inside depicting leering villains, gun play and crime, not to say revenge and wanton love, thereby giving to easily impressionable young minds a false and unreal view of life—it is a question: First, if the law, as in Washington, D.C., should not place the responsibility for keeping order adjacent to these places upon the proprietors, and second, if the City should not refuse to grant licenses to be operated in the residential outlying districts of the City, and, third, if the view of encouraging the exhibition of good, elevating pictures, the City, while requiring every safeguard against accident and fire, should not allow settlement houses, institutes and even churches, seeking the ennoblement of young people and the betterment of social conditions, to operate licensed "movies" without the present hampering conditions.

Another cause of delinquency was found to be

Wife Desertion,

with its allied woe of widowhood. Look at it hard! Scene repeated again and again in the Chambers! Comes an honest, good living, hard-working woman, left with two or more children dependent only upon her exertions. Possibly she has already visited one and another of the "Homes" to see if she could afford their maintenance in them, but with her meagre wage she cannot afford it even if they were not overcrowded; so, to earn any support for

them, unless she can do it in her own rented room, she must place the youngest in a "ereche," paying for it while she works, and leaving the older ones to the temptations of truancy and the street, to have them become delinquents through misfortune, and what is she to do? Have them wrenched away from her mother-love and placed "out?" To do so would be a monstrous injustice. Only as a last resort should any Court sever a family tie, and instead of having them become charity charges, less expensive would it be and far better all round, for the municipality, if not the State, to help that woman secure work that she could do with her children about her, and, so that she brings them up in a decent home to be good citizens—bonus her, under efficient supervision, so much per child per year, until, at 14 years of age, they are able to support themselves.

Another cause has been the cupidty of parents. In the case of boys and girls over school age and earning wages, repeated complaints were made that they were beyond control, refusing to work or working only half time and threatening to run away—yet when sifted down, the bottom of the trouble was, if not fault-finding with the size of the wage, their nagging insistence upon receiving and dispensing the sum total contained in the pay envelope—a trouble frequently not easily adjusted except by a hard and fast agreement as to how much the parents should receive towards board, clothing and lodging.

Still less credible was their eagerness to have their children engage in the work of the streets—paper hustling or parcel carrying. To be sure, many a boy has survived their temptations to become a good citizen, but boys generally being imitative, they are apt to reproduce in their lives the bad language, drinking, deception and licentiousness they see and hear in the work of the streets and to become indifferent and callous to them. At all events, no responsible father or mother would tolerate having their children brought up among these things in the home, yet without even the excuse of need, and only for the bit of money in it, this was the environment into which parents were shown to have thrust their boys, to have them become self-confessed, dirty-

mouthed, evil-minded, filth-practising delinquents.

So, too, the indifference of parents to the physical ailments of their children has been another cause especially in the case of truants. Not being able to "keep up" with their classes and perhaps "teased about it" by their mates or disciplined by the teacher, either through discouragement, wilfulness or fear, they become irregular or delinquent in their attendance at school, and, on the truant or other officers bringing the parents into Court, the truancy, on investigation, was, with medical help, generally found to be due (leaving out mental defectiveness), to either malnutrition or some defect of eye, ear, nose, throat or lung, about which the parents already knew through the plan of medical inspection adopted by the School Board. The Court, however, being more a school than what people, ordinarily, conceive it to be, in no case has it been necessary to collect a fine—only to reason with the parents, pointing out that under the Act they are liable to a fine for contributing to their children being truants and therefore juvenile delinquents, but that the Court is not desirous of taking money from them, is seeking only the welfare of their children, and is willing to adjourn the case for a week or ten days, as the Act allows, "on condition" that within that time they file with the Clerk a reputable doctor's certificate showing that their children either have no need of or have received medical aid, and afterwards see that they go regularly to school, when, without an exception, they have accepted the condition and generally thanked the Court for its consideration. To illustrate: When serving a summons on a father, the officer found his ten-year-old motherless son in a filthy environment, emaciated and breathing with difficulty; so he took him to "The Shelter," where medical aid being summoned, he was found to be suffering from a bad case of adenoids. Nor was the father poor, just callous and defiant toward the visiting nurse—in fact, both had money coming to them from an estate, and on the father appearing in Court and learning the situation, he readily agreed to have the boy given medical aid, with the result that within a month he had gained

fifteen pounds in weight and both have since been grateful visitors at the Chambers.

As to mental defectiveness: Often has it been at once apparent to the Court when the saddening fact was, as yet, of no real concern to the parents; all they were sensible of was the badness of their children—"they would not go to school" or "would not work" or "were getting into trouble with the police" or "unmanageable at home," and they wanted them "put away." Fully two hundred of this class of boys and girls (morons) were under the attention of the Court, and in the large majority of cases they were the "repeaters," some of whom, to protect them against themselves, had to be sent to Industrial Schools—the last place to which, in justice to themselves, they should be sent. Others are unfit, even, for Industrial Schools, and, besides wearing their parents into nervous wrecks, are a menace to neighbors' children; yet, to your shame be it said, the wretchedness of the situation is that in all this great wealthy City and Province, there is absolutely no available place to which they can be sent for proper custodial care, nor immediate prospect of one unless at its next session the Legislature grant legislation to establish a training school of the residential colony type.

Not to particularize further, however, let it be said that the larger part of juvenile delinquency this year was traceable to the earlier failure of parents to be companions enough to their children to win and hold their confidence; either they found it troublesome to do it or were careless about doing it. They either held too loose rein to have their children begin to deceive through the license given them, or too tight a rein to have them chafe at restraint and begin to deceive, or, with father pulling one way and mother another, they were steered into deception, and these failures together, in many cases with an evident lack of self-control as the result of marital unhappiness, but spelt failure at the character training of their children and give point to the repeated assertion of social welfare experts—"behind

the delinquent boy or girl is the delinquent home."

Very evident is the

Complexity of Cases

with which the Juvenile Court has to deal, and whether or not it has been a success, yourselves and the public must be the judges. But to be the success it can be, assuredly there must come some relief from the handicaps under which it now labors. Its Chambers have become a very busy place; with the increasing pressure of work the Commissioner seldom finds time for lunch, and at five o'clock generally has advice seekers yet lingering in the "waiting room" to claim his attention; in fact, the Chambers are now a kind of safety deposit vault for all sorts of troubles and difficulties about which people do not care to go to the police, its disassociation from the police being one great reason why they bring them here—that and the comfort it is to unload them on somebody else's sympathy; and it entails an amount of work impossible to tabulate. Yet, it by no means follows that his day's work is done. After he has made his way homeward, people frequently call at his house or call him up on the phone to talk to him about their children or their troubles or other Court matters, when ahead of him is yet an evening's address or one or more speaking dates for which preparation has to be made.

As for his probation officers, though their hours are from 9 a.m. to 5 p.m., yet they are often at work before 8 a.m. and working until 10 p.m., and even later. So, too, as the police and other civic departments, as well as people generally, have come to know the service the Court can render, the increasing work has not only necessitated both the Chief Probation Officer and the Clerk being overtime at their desks in order to keep up with the mass of detail and record work, but also the probation officers being used as investigators where their proper work is to follow up probationers or adults under supervision.

For these reasons we should have at least one more assistant to act as record clerk and special investigator.

Other requirements that will have to be met somehow sometime if the Court is to be the success it can be, are, briefly:

(1) A proper Detention Home;

(2) Up-to-date Industrial Schools;

(3) The Training School for mental defectives, which the Provincial Convention, with Controller McCarthy as Chairman, is urging upon the Provincial Government;

(4) The Psychiatric Clinic which Dr. Struthers so strongly advocates as a department of the new General Hospital, and which is absolutely necessary to the Court in order to determine not only the cause, but also the cure of delinquency, as well as the training needed and the vocation for which the delinquent is fitted.

Not that the Juvenile Court is a cure-all—not for a minute! It is only one of a number of child-welfare institutions, struggling against the social conditions that necessitated them, seeking through the intervention of love to alleviate them, and looking towards the dawn of childhood's better day, and they ought to co-operate in a spirit of mutual helpfulness. But one thing is certain—the present age is pre-eminently the age of the child. Never before in the history of humanity were his possibilities and his rights the subject of so much attention, and what with our educational facilities, our medical inspection, of schools, our playground associations, our scout and cadet movements, together with the remarkable revelations of child study, over again is being re-enacted, only upon an immense scale, the scene when "Jesus took a little child and set Him in the midst of them."

Yet child-welfare work is only in its infancy. So much statesmanship is there in it, so certain is it that by caring for the present-day children we are caring for the nation's future, so self-evident is it that the future welfare of the nation depends upon the quality of the citizenship engendered in its boys and girls, that wonderful as has been the results achieved in child-welfare during the years that are gone, yet those results will be but as the foil and shadow to the exceeding brightness of the glories to be achieved in the years that are to come, and that largely through the agency of the properly equipped, up-to-date Juvenile Court.

In conclusion, the Court cannot refrain from placing on record its deep obligation to Dr. Helen MacMurchy, Dr. Clark, Supt. of the General Hospital, Dr. Hastings, the Medical Health Officer, Dr. Struthers, the

Chief Medical Director for the School Board, and more recently, Dr. Withrow, for innumerable kindnesses and especially for the invaluable expert advice freely given in helping to determine the "nature" of delinquents' weaknesses.

Our warmest appreciation is also due to the Crown Attorney, the Police Inspectors and Clerks, and the Detectives and Morality Department Officers for the ready assistance they have always been willing to give.

So, too, our heart's gratitude must be expressed to those social welfare workers,

too numerous to name, who have rendered to the Court willing and untiring service, and through their efforts helped to brighten many a home, especially Canon Green and his deaconess, Miss Newbury, as also to that host of good men and women in all quarters of the City and representatives of the churches, the schools and the press, as well as of business and labor, from whom have come words of approval, encouragement and commendation, not so much because of the personality of the Court as because of their sympathy with childhood's cause and with the endeavor being made by the Court to further it.

OF WHAT VALUE ARE SANATORIA AS A PUBLIC HEALTH MEASURE?*

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One might perhaps assume from the title of this paper that there exists some doubt as to the efficacy of sanatorium treatment. This, however, is not the thought in my own mind, and I am not taking up the subject in any argumentative way, but will rather endeavor to state a few points of real merit as I see them. Some profess disappointment with results of sanatorium treatment, and therefore with the benefits that they think should accrue from such service, but few if any of such critics have lived in a sanatorium, while a number may expect impossibilities. The indirect object of any public health measure is to keep the public well, as it has been proven beyond a doubt that a practical policy for the prevention of disease pays best. Sanatoria must, together with such measures as notification, dispensaries, social reform endeavors, and the like, take a place and exert their full influence and power for the social and physical betterment of the people.

In order to be more brief and concise, one might take the subject up under several headings, the first of which I will consider being **"The Value of the Sanatoria to the Patient."**

While we are considering the interests of the public at large, we must remember that the individual is the important unit

in that consideration, especially if he is sick, but more particularly if he is suffering from a communicable disease. While a patient suffering from a non-communicable disease deserves our sympathy and support, he is not in any sense so great a cause for individual and public anxiety as is the infectious case. As ignorance is probably the greatest predisposing cause of any disease, it is at once necessary and important that sick people should be taught, and this with all promptness and thoroughness. It is in this regard that sanatoria are of the greatest possible importance to the patients as well as to the general public. A patient suffering from pulmonary tuberculosis may be told what he should and should not do in order that he may improve or regain his health, prevent re-infecting himself and also infecting others, but this he cannot learn so well as from the tuition afforded in a Sanatorium, aided by an ever-present object lesson made possible by the presence of others with the same ideals before them. The moral support afforded by the companionship of others similarly afflicted is also of inestimable value in preventing introspection and helping to furnish that much-needed encouragement so necessary in treating so chronic a disease. A patient's habits and former mode of

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living are enquired into, and helpful suggestions and advice given. The education thus acquired is of a practical character, and is tried and its merits proven day by day. Hygienic training is enforced in a disciplinary way, systematic medical supervision is given, and the advantages of a dust-free atmosphere and facilities for rest in the open air day and night exemplified.

In the therapeutic management of this disease we must rely on sanatorium regime to reduce fever, promote appetite and the assimilation of food, and to counteract many of the distressing symptoms. Patients are schooled as to the infectiousness of tuberculosis, from what source such infection arises, and how necessary and important it is that every possible precaution should be taken to make further spread of the disease impossible. The prevention of a non-existing mixed infection or the lessening of a tendency to a further infection of this kind is also made more possible by reason of the patient's isolation and more or less complete removal from the sources of such. The patients are placed under ideal conditions until such time as they can produce immunity and tolerance, if such is possible. In the giving of tuberculin and vaccines patients must be kept at rest, and obviously a country institution is a more suitable place than a dusty city or a stuffy home. A specific agent may yet be found that will cure tuberculosis, but even then the sanatoria and other public health measures must still educate the unhygienic, and by so doing prevent the further preparation of the soil, the actual infection or implantation of the seed, and the subsequent liability to relapse.

Without constant supervision, and an object lesson present, the proper hygienic training of a consumptive in the home is full of difficulties, while the patient from sanatorium treatment can hope for the control and arrest of hyperinoculation, the beneficial effects of auto-inoculation by graduated labor and the production of an active immunization with tuberculin. A patient thus treated re-enters the home as a deciple of hygiene, and is possessed of talents that will make possible greater citizenship.

"Value of sanatoria to patients' family and friends." On entering a sanatorium

a patient's former environment and home surroundings become known. They are thoroughly investigated so that faulty methods can be corrected. In this way the home becomes impregnated with the fact of what tuberculosis is, that it is seldom of a hereditary character, but rather a house disease, infection arising from contact, one member possibly sowing the seed and all taking part in the harvest.

Familiarity breeds contempt in so far as the former condition of phthisophobia existed, and the members of the household learn the fact that tuberculosis is a disease, not a disgrace, a personal and public calamity which must be grappled with fearlessly but intelligently. The great importance of early diagnosis and prolonged treatment becomes known, and with these facts in mind every member of a family already subjected to infection are placed under supervision. The family physician is thus given the responsibility of keeping the members of that household in good health, and not, as is too often the case, called in when hope has passed and regret has taken the field. The members of a family become acquainted with the benefits derived from sanatorium training, and this information makes further home treatment possible. The importance of institutional segregation of consumptives until such time as they can be trained is therefore obvious. While a patient is absent his home can be fumigated, rearrangements made, and sleeping porches built, all of which will add to his comfort and welfare on his return home.

Home conditions in large cities and crowded districts may be so changed through education inculcated into the minds of patients while undergoing treatment in a sanatorium that the removal to the country formerly thought necessary by the family may often be avoided.

It is a pathetic fact, but nevertheless true, that in the majority of cases a former indifference regarding the sufferings of others is only lost after the knock comes to our own door. This apparent lethargy is now replaced by a deep-seated interest and enthusiasm not only personal, but public, and this must be wide spread and of great value in the interests of public health.

When we recall the fact of the average time at which people are afflicted with tuberculosis, it at once occurs to us that at this age the majority, while having no doubt bright prospects before them, are not, nevertheless, possessed of great means. For this reason the financial burden often falls on the parents and other members of the family. This being the case makes the question of ways and means one of importance. I take it that the sanatoria are of value from an economical standpoint, as I do not feel that patients can be so well cared for at home for the same expenditure as in an institution. Again there are often certain existing circumstances in the home or pertaining to a patient that make a possible temporary abode in an institution acceptable. An example might be cited,—if the husband, a wage-earner, is a patient, he must be cared for. If at home this duty devolves upon his wife, which circumstance in most cases at once closes all sources of revenue. On the other hand, if the husband can be admitted to a sanatorium, his wife can in many cases earn a livelihood, and also with advice make the home more hygienic and habitable.

Value of Sanatoria to Local as Well as General Community.

From statistics at hand it is quite evident that sanatoria are a benefit rather than a detriment to a local community. Not only are there less deaths from tuberculosis in more than one municipality with institutions near by, but it is also a fact that the general health and mode of living of the inhabitants of such places has improved thereby.

Quite recently the chief magistrate of a town with a sanatorium near at hand received a communication from an officer of another municipality, asking if he considered the close proximity of such an institution a detriment, and if he would again be in favor of its establishment and support the project as before with a cash grant. The reply stated that the institution was considered to be a help to the town in many ways, and that its establishment would again be encouraged.

In considering the value of sanatoria to the general public, we touch a subject of large proportions, and one which cannot

by any means be dealt with, but in a fragmentary way in a short paper such as this. The establishment of sanatoria is a public health measure, just as much as is the supply of isolation hospitals, the consideration of a pure water supply or the scientific disposal of sewage. The movement must not only receive Federal, Provincial and Municipal support, but must also interest the individual sanitarion and philanthropist. Professor Farrand of New York claims that establishments taken care of jointly by public and private endeavor, have been most successful, and do most to create and maintain a live interest in the subject. If the sanatorium is benefiting the individual it must of necessity have a wide and ever-increasing influence for the good of the general community. Men and women of every walk of life, and from every part of the country become trained sanitarians in this particular branch of public health endeavor, and they render services of priceless value in teaching the people that it is the careless consumptive that endangers his fellow-men, also what steps must be taken to make the spread of tuberculosis impossible.

One cannot help but view with interest and satisfaction the statistics from the recent Province of Ontario reports. In the decade preceeding 1899 the mortality rate for tuberculosis was on the increase, until in that year there were no less than 3,405 deaths. In 1910, in spite of the increase in the population of the Province, and the greater accuracy in the returns as a result of special attention being paid to the disease, the number of deaths were 2,287, a decrease of 1,118. Had sanatoria anything to do with these results? Much has, of course, been due to earlier diagnosis, a general dissemination of knowledge on methods of hygiene and prevention of disease, and to improved sanitary methods. These conditions apply equally, however, to all diseases, and if they alone were of importance the death rate from other causes would have been reduced just as much as that from tuberculosis, which was not the case.

In 1899 the deaths from tuberculosis represented 11.8 per cent, of those occurring from all causes, while in 1910 the deaths from tuberculosis represented only 6.8 per cent. of those from all causes. I

therefore take it that the establishment of sanatoria and dispensaries, together with the great educational benefits derived from a general campaign throughout the country against tuberculosis have made these results possible. I endeavoured to secure figures from Ottawa that would give us an idea of the proportion of our Canadian population arranged according to the following social scale.

- (1) Wealthy.
- (2) Well to do
- (3) Artisans.
- (4) Weekly wage earner.
- (5) Indigent.

This information I could not secure even approximately. We might, however, briefly consider of what value established sanatoria are to the various classes named.

(1) *Wealthy*.—While there is at present no institution in Canada catering to the wealthy consumptive, those that do exist, however, take care of many of such sufferers. The choice of a sanatorium here cannot be for any financial reason, but must rather be chosen for social reasons or on merit alone.

(2) *Well-to-Do*.—This class of our community are usually busy men, who, by reason of their business training, figure things out according to values represented.

(3) *Artisans*.—Here is represented a class that are usually on salary only, and who for financial, as well as other reasons, deem it best to accept treatment in special institutions. That many of this class live in hotels and boarding houses must be cited as one special reason for such a choice.

(4) *Weekly Wage-Earner*.—By reason of the fact that this class depend on a weekly wage, and have not as a rule been able to accumulate savings, they are in many cases forced to accept treatment and some financial aid in an institution.

(5) *Indigent*.—Have to become a public charge and seek help in the only class of hospital that will care for them.

In considering the circumstances governing all classes we must remember the fact that tuberculosis is a medico sociological problem of far-reaching ramifications.

Value of Sanatoria to the Student of Medicine and Physician.

Before the establishment of dispensaries and sanatoria very scanty training was

given the student in the diagnosis and care of tuberculosis patients, with the result that the graduate in medicine entered upon his life's work poorly equipped for treating this very prevalent affliction. Even now too little advantage is taken of the clinical material available in the sanatoria, where not only can the existing symptoms of the disease be considered, but its proper treatment studied. In no other possible way can the student become acquainted with all the problems confronting the patient from the first signs of infection up to the time of ultimate prognosis.

It is not necessary for the practitioner to try and teach his patient how to live hygienically at home, or to rearrange the household so as to make such a course possible. All this is already planned for him, and after the patient receives a course of disciplinary training in an institution the efforts of the physician in the patient's behalf are not only made easier, but the results of such are much more satisfactory both for himself and patient. I feel that it is the duty of every practitioner to identify himself with some sanatorium, just as much as this is necessary with regard to a general hospital. Physicians should also visit such institutions, so that they will know where they are sending their patients, and what the facilities are there for the patients' care.

When a physician is devoting all his time and energies in the study of one disease and its complications, is it not natural to expect that he should become more familiar with its many details than the man who is accepting the greater responsibilities of general practice? If this is so, then the patient and his physician must gain thereby.

Training schools for nurses in connection with special institutions of this kind must be of value to the patients, his physician and to the general public, as are also the established open-air sanitarium schools.

Not only have sanatoria been of considerable value as a public health measure heretofore, but by reason of recent advanced legislation, together with the untiring and intelligently directed efforts of our Provincial Health Officer, I feel we can with a surety expect more benefits and greater results in the future.

MILK IN RELATION TO DISEASE*

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Tuberculosis.

Although direct infection of the milk with tubercle bacilli from a tuberculous udder is supposed to account most commonly for the presence of these organisms in cow's milk, yet one must not lose sight of the fact that there are other fruitful sources of contamination. The dust of the byre may, and often does, carry tubercle bacilli, which were derived from the sputum of a cow suffering from pulmonary tuberculosis, or from the sputum of a consumptive milker or attendant. Dried faecal matter containing virulent organisms may infect the milk, for it is well known that, while in many cases of slight tuberculous lesions small quantities of organisms are found in the faeces, yet where the animals are clinically tuberculous, large numbers of living and virulent tubercle bacilli may be present. Furthermore, the saliva of tuberculous cows may contain large quantities of virulent organisms, and hence when they lick their flanks the bacilli are deposited there, and so gain access to the milk during milking. The milk of tuberculous cows invariably contains large numbers of bacilli, but the presence of the bacilli in the milk is not always in proportion to the extent of the disease in the animal, especially when diagnosed clinically.

It was originally believed, and is still maintained by some, that the milk of tuberculous cows is infected only when the udder is affected. It has been shown, however, by various investigators that tubercle bacilli may be found in the milk of cows suffering from generalized tuberculosis without affection of the udder, so far as careful examination during life and post-mortem could show. Again Rabinowitch and Kempner showed that when the milk of fifteen cows which had reacted to tuberculin, but showed no clinical signs of tuberculosis, was inoculated into guinea pigs, 75 per cent. of the animals yielded milk containing virulent tubercle bacilli. Further, Dr. Mohler, of the Bureau of Animal Industry, Wash-

ington, carried out a series of experiments in this connection. He inoculated and fed guinea pigs upon the centrifugalized sediment of milk and cream from a number of cows that had reacted to tuberculin, but showed no signs of udder disease clinically. In all, 56 cows were used, and of these 12 were found to yield milk containing virulent tubercle bacilli. As a result of his experiment Mohler arrived at several important conclusions, namely, that tubercle bacilli may be demonstrated in the milk of tuberculous cows, whose udders show no sign of the disease either macroscopically or microscopically, and in sufficient numbers, and of sufficient virulence to produce infection both by ingestion and inoculation. Also that the udders of tuberculous cows may become infected at any moment, while the presence of the tubercle bacilli in the milk of tuberculous cows is not constant, but varies from day to day. Similar experiments demonstrating the infectivity of the milk of cows which have reacted to tuberculin, but whose udders were clinically unaffected, have been made by various other authorities, while on the other hand, Ostertag and Young in various experiments which they carried out, obtained negative result when such milk was fed to and inoculated into guinea pigs. There seems, therefore, to be some doubt regarding the presence of tubercle bacilli in the milk under such conditions. The discrepancy is, however, not to be wondered at, for it is highly probable that the bacilli only make their appearance in the milk under these circumstances, when they are present in the blood or lymph streams as the result possibly of the breaking down of some pre-existing tubercular lesion.

Further, apart from the three common clinical symptoms of tuberculosis of the udder, viz., enlarged supra mammary lymphatic gland, indurated quarter, and irregular nodules in the gland substance, there is a fourth form of udder tuberculous, namely, small nodules in the mucous lining of the milk tubes, and these

may break down, and their contents be mixed with the milk. In view of the more recent investigations it is evident that clinical examination alone cannot be relied upon for the detection or udder tuberculosis, and that the only reliable method is by the inoculation of the milk into experimental animals.

Significance of Bovine Tubercle Bacilli in Milk.

It is now established beyond doubt that there are two chief types of tubercle bacilli, human and bovine, which are differentiated by their cultural characters and different pathogenic properties. It is suggested, and not without reason, that the two types are simply varieties evolved by passage through animals, so that it acquires many of the characters of bovine bacilli. It is an equally well established fact that the bovine type of bacillus is pathogenic for bovine animals, although with a less degree of virulence.

The Royal Commission on Tuberculosis, in their Second Interim Report, state:

"There can be no doubt but that in a certain number of cases the tuberculosis occurring in the human subject, especially in children, is the direct result of the introduction into the human body of the bacillus of bovine tuberculosis, and there can also be no doubt that in the majority at least of these cases the bacillus is introduced through cow's milk. Cow's milk containing bovine tubercle bacilli is clearly a cause of tuberculosis, and of fatal tuberculosis, in man."

In their Final Report, 1911, they are even more definite:

"There can be no doubt that a considerable proportion of the tuberculosis affecting the children is of bovine origin, more particularly that which affects primarily the abdominal organs and the cervical glands." The Commissioners sum up as follows:

"We prefer to regard these two types as varieties of the same bacillus, and the lesions which they produce, whether in man or in the other mammals, as manifestations of the same disease."

While in the case of infantile tuberculosis the bovine type of bacillus predom-

inates, in adults the human type prevails; and since the differences between the types of bacilli are differences of degree only, it is a reasonable supposition that bovine bacilli ingested during early life may, under the influence of a human environment, be modified in type, the result being that when these organisms are isolated, although originally of bovine origin, they will exhibit the characters of the human type. A consideration of all these facts makes it evident that the sooner that one or other of the methods of eradication of bovine tuberculosis is adopted, the sooner will it be possible to decrease the mortality from the great white plague.

Milk-Borne Epidemics.

It has been said, and rightly, that no two milk-borne epidemics are alike. So that it is not possible to lay down any hard and fast laws of the pathogenomic significance, nor are there any definite signs which never vary. In most epidemics traceable to milk the disease has followed the line of distribution. The area of infection varies: it may be restricted to a group of houses in a certain area, or may embrace several streets, or a whole district. Usually the upper classes are affected to a greater extent than the lower classes, for the simple reason that whereas in the poorer homes the milk is only taken with tea or some other beverage, the more wealthy consume considerable quantities of milk either raw, or only slightly warmed. Again, in the larger houses the milk is stored for a longer period than is the case in the more humble dwellings where the inhabitants live from hand to mouth and purchase a small quantity as it is required. Hence in the former case there is more opportunity for the milk not only to become infected but for the existing organisms to rapidly increase in number. Another general sign of a milk-borne disease is that it attacks the members of a family who drink most milk, for this reason one finds that women and children are more commonly affected than are men. Further, the period of incubation in different epidemics due to the same organism varies, and as a whole the time which elapses between the infection and the first evidence of the disease is shorter when the virus is milk-borne than when some other agent is employed as a car-

rier. Whereas, for example, the incubation period of scarlet fever and diphtheria normally contracted varies from three to five days, in a milk-borne epidemic there may be evidence of the disease in a few hours, and in the case of typhoid fever a few days. Still even this varies and is not a reliable indication of milk infection. It must be remembered that where organisms have been multiplying in milk their toxins are produced there instead of in the human body, and for this reason the case may, and frequently does, resemble an intoxication rather than an infection.

Scarlet Fever.

When conveyed by milk this disease has shown modifications of a more or less marked character. The disease is generally of a mild form, and a large number of ordinary sore throats are frequently found in conjunction with an outbreak of the specific disease when milk is the vehicle. According to Power, in scarlatina the disease is often confined to the throat, while the rash may be evanescent and the desquamation scanty. (Parsons). The part played by the cow in the transmission of scarlet fever formed the subject of a heated controversy in 1885, at the time of the North London and Hendon outbreaks, and this has been revived from time to time as fresh outbreaks occurred. Klein and Power laid the onus definitely on the cow in the outbreak mentioned, describing lesions found in the udders of three of the cows whose milk was being distributed in the affected area, and assuming that these lesions were peculiar to the affection, there are no grounds whatever for assuming that this vesico-pustular eruption on the udders and teats is peculiar to, or indicative of, scarlatina in the cow. Klein attached great importance to the co-existence of ulceration, scabs, and localized alopecia, but in some subsequent outbreaks which were attributed to cow infection, as for example the 1909 London epidemic (Drs. Hamer and Jones) and that of Glasgow 1892 (Drs. Russell and Chalmers), the skin lesions were absent. Further, the experiments carried out by Klein to identify the streptococcus from the udders and teats as the cause of scarlet fever were incomplete, and it is hard to understand on what grounds Klein considered himself justified in arriving at the conclusion that his streptococcus was the

organism responsible for scarlet fever, since organisms indistinguishable from it can be demonstrated in the throat of persons suffering from other acute catarrhal conditions.

It was suggested in the London epidemic of 1909 that the cow scarlatina had its origin in feeding cake, which is so highly improbable as to be unworthy of note. The only cases in which the cow has been accused are those in which it was not possible to trace the human origin of the disease, and when one considers the grounds that infected persons would have for suppressing the fact and remembers the ignorance of the class of people likely to be concerned in the infection, it is easy to understand how the most important fact may never come to the knowledge of the persons interested with the investigations. When one reviews the number of cases to be due to human contaminations, one cannot but be struck by the way in which they outnumber those cases whose origin was not discovered and hence attributed to bovine scarlatina. It seems possible that scarlet fever, like swine fever and canine distemper, is due primarily to infection by an ultra-visible virus, and that the streptococcus is the accidental organism, which, although normally present in the throat as well as other parts of the body, gives rise to the secondary lesions. There is not one tittle of evidence to show that an ulcerated condition of the teats and udders of dairy cows is a predisposing factor in the transmission of the disease. The mere fact that in some cases of scarlet fever epidemics, cows showing such lesions were found in the suspected byres was probably nothing more than coincidence. It is rare to find a dairy in which some of the cows do not show lesions of a similar kind, and one would not be in any way surprised to find streptococci in such lesions. Moreover, although some cows did possess sore or ulcerated teats or udders, it was not proved that the milk of those cows was capable of causing scarlet fever any more than the milk of the cows which did not exhibit udder lesions.

It is almost certain that the infection in every case came from outside, and that the cows did not even harbor the virus (?) of scarlet fever. There now seems to be no doubt that cow's milk plays an important part in the transmission of scarlet

fever, but that the cow does not suffer from the disease.

Diphtheria.

Although in the case of scarlet fever there was some excuse for doubt concerning the part played by the cow in the transmission of the disease, yet in the case of diphtheria no such error is possible. This is due chiefly to the fact that in the latter disease the causal organism is well known, and easily recognized. Probably one reason why this disease was ascribed to the cow was due to the fact that the causal organism may not leave the body of the affected person for several weeks, and hence such a person is a carrier of the disease during that period, in which case it is not easy to trace the infection to an outside source. Moreover, the organism may cause no more than a catarrhal cold, and yet under favorable circumstances it can become more virulent and set up diphtheria. Further it has been shown that in apparently healthy persons who have not suffered from diphtheria the Klebs Löffler bacillus may be present in the throat. Löffler found diphtheria bacilli in the throats of four out of 160 children, and Park and Beebe found similar virulent bacilli in eight out of 330 healthy throats. Hewlett and Murray found 15 per cent. of the children in a general hospital had diphtheria bacilli in their throats. Where there are outbreaks of diphtheria one always finds people suffering from colds. Since the discovery of the Klebs-Löffler bacillus, attempts have been made to show that organism can cause mastitis in cows, but all attempts to demonstrate this fact have failed. It is almost certain that the organism with which Klein experimented by inoculating cows in the shoulder and producing systemic disarrangement with the appearance of the organisms in the milk was not the Klebs-Löffler bacillus at all, but a similar organism which was non-pathogenic to man.

Its chief difference is in the fact that it was present in the milk, indicating a septicæmic condition, while the true diphtheria bacillus on inoculation remains localized, and, further, that while Löffler never succeeded in obtaining growth of his bacillus at ordinary room temperature, and was unable to grow it in gelatine, those that Klein described as occurring

in the pustules on the ulcerated udder of the cow, grow luxuriantly in gelatine, and at ordinary room temperatures. Other investigators (Dean, Todd, Ashby) have isolated diphtheria bacilli from ulcers upon the teats and udders of cows whose milk was supposed to have caused an outbreak of diphtheria. The authors came to the conclusion that the lesions in the cow were not due to the diphtheria bacillus, but that the ulcerated patches formed a convenient habitat for those organisms. Jensen considers that "the opinion that was formerly held by some that diphtheria in man could come from a disease of milch cows is entirely erroneous," while McFadyen says "no one having a knowledge of the diseases of our domestic animals can for a moment believe that this is the direction in which to look in trying to trace the cause of human diphtheria."

Typhoid.

Several epidemics of typhoid fever whose origin was traced to milk which had been contaminated with typhoid bacilli have been reported from various parts of the country during the past few years. Where the water supply is not the source of the infection, milk is perhaps the agent most frequently blamed. Some doubt existed at first concerning the part played by milk in the transmission of the disease due chiefly to the fact that the typhoid bacilli could not be found in it, recent observations, however, have shown that milk can, and frequently does, act as the carrier of the disease. In epidemics where it was not possible to trace the infection of the milk to some sick person connected with the farm, and yet the particular farm was clearly indicated as the seat of the infection, an endeavor was made to connect the infection with a disease of the cows, but unjustly, for there is no case known of disease in the lower animals due to the typhoid bacillus. Apart from direct contamination from some person suffering from the disease, or convalescents, milk may become infected with typhoid bacilli as a result of the addition of contaminated water, or such water having been used for dairy purposes. Water from shallow wells and surface streams is liable to become contaminated directly or indirectly through carelessness or from sewage. Typhoid bacilli may be blown about in dust, carried on boots, by small

animals and flies. Bacilli ingested by cows through the drinking of infected water pass through the intestinal canal, and are voided in the faeces, whence they may easily gain access to the milk either by contamination with dust composed of dried faecal material or by some of the contaminated bodily filth falling into the milking pail or soiling the milker's hands. In no case are the bacilli voided in the milk. For these reasons epidemics of typhoid fever traceable to milk are found usually to originate from country dairies rather than from those in towns, and this is another reason for the inspection of country dairies being as rigorous as that of those in towns.

Sore Throat.

There are on record several epidemics of sore throat apart from the sore throat of scarlet fever and diphtheria, which were traced to milk. Associated with these epidemics eruptive conditions of the udders and teats of the cows supplying the suspected milk were noted, and from some of these, Savage has isolated a streptococcus. To confirm this he examined the streptococci found in 16 cases of sore throat, and demonstrated two types, one of which had been named *S. anginosus*, and the other was indistinguishable from *S. pyogenes*. Culturally and morphologically *S. anginosus* resembles *S. mastitidis*, but shows a greater virulence for small animals, and in some later experiments Savage found that *S. mastitidis* set up mastitis in goats when injected up the teat canal, while *S. anginosus* did not. These results suggest that an important difference in functional power separates the types and that under ordinary conditions *S. mastitidis* does not cause disease in human beings. Savage inoculated his throat with large quantities of *S. mastitidis* on two occasions, but without any local or general ill effects. From a pathological standpoint it would seem that the majority of cases of bovine mastitis are due to an organism which is not harmful to man, which accounts for the fact that while bovine mastitis is common, sore throat and other septic outbreaks from milk are rare. It seems certain that in this case as in others the causal organism is not present in the milk at the time that it leaves the udder, but rather that the infection of the milk is due to contamina-

tion from an outside source, such as an existing case of sore throat.

Epidemic Diarrhoea.

Delepine records having isolated from milk causing intense diarrhoea in children and adults, a bacillus identical with one causing fatal septicæmia in guinea pigs after injection with mixed milk. It resembles *B. coli* in pathogenic action, mode of growth, size, shape and motility, and its discoverer is of opinion that it is a pathogenic variety of *B. coli*. Booker believes that three principal forms of summer diarrhoea in infants can be distinguished, dyspeptic, or non-inflammatory diarrhoea, staphylococcus gastro-enteritis, and bacillary gastro-enteritis, and that no specific organism is found to be the cause of the disease, but that it is generally to be attributed to the result of the activity of a number of varieties of bacteria, some of which belong to well-known species, and are ordinarily present, the most important being *S. enteritidis* and proteus vulgaris. Another organism, according to Klein, is *B. enteritidis sporogenes*, a ubiquitous organism occurring in normal faeces, sewage, manure, soil, dust and milk. Other investigators conclude that *B. coli*, either alone or in conjunction with other organisms, has been the cause of epidemic diarrhoea. Cumston, as the result of investigations, concluded that *B. coli* associated with *S. pyogenes* was the chief pathogenic agent, and that its virulence was exalted by the combination. Lesage, in testing the agglutination property of the serum of children affected with the disease obtained a positive result in 80 per cent. of the cases. Delepine considers that in most cases the disease is the result of the infection of food by an organism of the colon group, and that milk is the most common cause, becoming infected either at the farm or during transit. On the other hand, there is overwhelming evidence in support of domestic infection; numerous investigators have traced the contamination to this source, and moreover, numerous cases have occurred where the individual was fed on condensed milk, and in children that were breast-fed. The fact remains, however, that the disease is of bacterial origin, although the source of the organism is at present somewhat obscure. It is evident that our knowledge of the bacteriology of epidemic diarrhoea is

at present incomplete, and three reasonable suppositions present themselves:

1. It may be that the whole group of choleraic, enteric and diarrheal diseases are caused by a group of micro-organisms closely resembling each other in many respects; (2) that the different forms of diarrhoea have their own specific causal organism; or (3) it may be a question of the association of organisms that brings about the disease.

Anthrax.

Chamberland, Roux, Nocard and others, have observed that the milk of cows affected with anthrax contained virulent anthrax bacilli. It does not follow, however, that all cows affected with the disease secrete the organisms in their milk. Cows that appear healthy give milk free from bacilli, even though they are affected. It is only during the last stages of the disease, after it has become septicæmic, that the organisms are present in the milk. Their presence is accounted for by the possible occurrence of hemorrhages in the udder.

Foot and Mouth Disease.

Owing to the comparative rarity of outbreaks of this disease in the British Isles, and when it does occur, to the early diagnosis and drastic methods adopted for its suppression, there are but few cases of human infection on record. In view, however, of the recent outbreaks occurring in the North of England, it is well to remember that the infection can be conveyed to human beings, both from the udder of the affected cows and by the milk. The vesicular lymph is extremely virulent, and the disease is spread by inoculation. In the case of milkers, the hands and mouth are usually affected, while where milk is the vehicle the mouth alone is the common seat of the disease, the virus entering through the mucous membrane, especially if there be any break in its continuity.

This virus was responsible for the outbreak at Dover in 1884, in which some 205 persons were attacked in all, four cases being fatal, possibly as the result of secondary infection.

Malta Fever.

Since cows are susceptible to this disease, and the micrococcus *miltensis* has been demonstrated in their milk, it is conceivable that they may be a means whereby the infection is spread, although there do not appear to be any cases of such an infection recorded.

Actinomycosis.

This disease of the udders of cows is distinctly rare; but since man may be infected through inoculation of the mucous membrane of the mouth, the milk of such cows should not be used for human consumption.

The Germicidal Property of Milk.

It was noted, as long ago as 1890, that fresh milk possessed the power of inhibiting the growth of bacteria, the number of organisms actually decreasing during the first few hours of its leaving the udder. This phenomenon was explained by ascribing a germicidal property to fresh milk. Of late years, however, some doubt has arisen in connection with this power of destroying organisms. Stocking concluded that the decrease was due, not to any specific germicidal property, but rather to the fact that many organisms dropped out simply because they did not find the milk a suitable medium in which to multiply. Others again have suggested that the apparent decrease in number may be due to the fact that some of the bacteria become agglutinated into clumps, and as each clump produces only one colony, the bacteria are apparently diminished in number. It is highly probable that all three factors take part in the decrease in number.

THE ERADICATION OF THE TUBERCULOUS MILCH COW

By PERCY SIMPSON, F.R.C.V.S.

There can be no two opinions as to the desirability of the banishment of the tuberculous milch cows from our midst, both

from the medical and veterinary aspect. A doubt has been cast in recent years on the transmissibility of bovine tuberculosis

to the human subject. This theory is now generally disbelieved.

Any suggestions brought forward, must therefore be founded on the assumption that bovine tuberculosis is readily communicable to man, and may be conveyed in the milk of tuberculous cows.

When draughting any schemes for freeing our milch cows from tuberculosis and preventing its reappearance several facts must be borne in mind.

Any sudden or very drastic action might do a great deal of harm, as an example: if every tuberculous milch cow, discovered by means of the tuberculin test, applied all over these Isles, were instantly slaughtered, or the milk from these animals stopped, the children of the poor would be practically starving, owing to the high price milk would obtain, due to shortage of supply.

With unlimited funds for instituting a complete and thorough testing with tuberculin of all milch cows, the slaughter of diseased animals, the compensating of owners, and the thorough disinfection of cow byres; the task of eliminating tuberculous cows, although heavy, might eventually be carried through.

Sufficient money for this is never likely to be forthcoming; but the subject before us is one of such national importance that as much money ought to be provided by the State for the protection of infants who will eventually be the workers of the nation, as is now expended in providing for the maintenance of those past the working age.

The method of applying what funds might be available, and the fairest way of apportioning them, are matters open to discussion; the two most expensive items being the payment of inspectors, and compensation.

Inspection of herds, meat and other foods, is now rightly considered a matter of such importance that local authorities should appoint whole-time inspectors for this duty. The present lax and unequal methods of inspection should be gone into, and some local authorities should be compelled to institute inspection of dairy herds within their areas.

Again, there are men appointed to the position of inspector, who are totally unfitted for the post, and it should be a *sine qua non* that no man should be appointed

unless holding a recognized diploma or certificate. The men best qualified to inspect dairy herds and cow-sheds are veterinary surgeons, and in cases where the cause of an outbreak of disease among humans is due, or suspected to be due, to contaminated milk, he and the medical officer of health should act together to decide the question.

Qualified men will probably not take these posts at the same remuneration as the ordinary sanitary inspector who has cowshed inspection added to his other duties, which no doubt he is fully qualified to deal with, but in the end the extra outlay would be justified.

It is not necessary to harass the cow-keeper; but haphazard, occasional inspections will never produce the desired result. Inspection should be carried out once every month.

Before discussing the amount an owner should be paid as compensation for an animal that is compulsorily slaughtered, it must be decided how tuberculous cows are to be dealt with. Are all cows that react to the tuberculin test to be immediately seized and slaughtered. This procedure would be almost fatal to the milk industry, and milk instead of being the staple food of infants would become a luxury that only the rich could indulge in.

In cases where a milch cow reacts to tuberculin, but is in good condition, has no clinical defect of the udder, and whose milk is proved to be tubercle free, should be allowed to remain as a milch cow until dry; but should be subjected to periodic veterinary inspection, the milk tested at intervals, and the animal kept isolated from the healthy ones or placed in company with others in the same category.

When the animal has ceased to give milk it should be valued as a tuberculous cow, slaughtered, and the carcass carefully inspected.

If any portions are passed as fit for consumption they should be sold, and that amount credited to the owner, and half of the difference in agreed value prior to slaughter paid as compensation.

All interested in this subject will, I think, agree that in all cases where tuberculosis of the udder is present, or where tubercle bacilli are found in the milk, the sale of such milk should be immediately

stopped and the animal slaughtered. Compensation for such cases to be paid.

Under the Dairies and Milk Shops Order an inspector is able to stop the sale and use of tubercle infected milk, but this does not go far enough, as the cow may be sold in the open market, and there is often difficulty in tracing it.

These are of course severe measures to adopt, but if any real benefit is to be obtained, the subject must be firmly and thoroughly handled; there is no necessity to largely compensate owners of tuberculosis cows if they are warned and given a reasonable time to "put their house in order."

The tuberculin test is now accepted as reliable, and the cost of having the test applied is comparatively small when its benefits are taken into account. The price paid for cows that stand the tuberculin test is higher than that paid for animals bought in open market; and if the system of buying only cows that have passed or would pass the test was generally adopted the cow-keeper would be justified for a time in raising the price of milk.

Before the adoption of such severe and costly measures as suggested above, a system of co-operation between the Government and cow-keepers might be given a trial.

If a cow-keeper can prove that his cattle have been regularly inspected and tested by a qualified veterinary surgeon, and that his herd is tubercle free, he should receive a premium at the rate of so much per head per annum from the State, and should also have a certificate issued by the Government, which would be held to be a hall-mark for the purity of his milk. This system would be open to abuse, but what rules and regulations are not? The public would soon learn of this guarantee and the man who did not take advantage of it would soon find his trade diminish, and would have to fall into line with the others, or lose his trade.

That it is possible to start and maintain a tubercle-free herd, and at the same time make it remunerative, has been proved. I know of such cases where the owners are not moneyed gentry with large estates, but hard-working, hard-headed farmers. In every case they have a larger demand for milk than they are able to supply.

Many farmers and cow-keepers have much to learn with regard to bovine hygiene. It is yet very difficult to convince some of them that ventilation, drainage, general cleanliness, etc., are not to be looked at from the point of satisfying the inspector, but that they are matters which, if put properly into practice, are of great benefit to their herds, and incidentally to themselves.

So, too, the small breeder has in a vast number of cases yet to learn that the offspring from unhealthy parents costs just as much to rear, and often more, than those from healthy ones brought up in suitable surroundings.

Much is being done by the different cattle breeders and agricultural societies in trying to raise the standard of our herds, and they could be of great assistance in helping to solve the problem of the tuberculous cow, if they concentrated their energies in this direction by constantly bringing the matter before their members.

Discussion.

Mr. D. George Collins (City of London) said that for years this problem had occupied the attention of medicine, and the trade science. Let them try to urge to a conclusion their belief, and send a strong resolution to the Board of Agriculture and Local Government Board to call a conference of breeders, dealers, insurance companies, and local authorities to initiate a scheme for legislation. A milch cow, if found yielding infected milk, should be immediately slaughtered. Some of the meat might be found free from disease, and the difference between the results of sale and value could be made up by a joint contribution from the State and insurance companies.

Sir Shirley Murphy (London) said he thought that the first question which needed to be considered was whether it was practicable for the owners of cattle to take steps to reduce the prevalence of, or eliminate tuberculosis from their stock. He believed the answer to this would be in the affirmative. The second question was how the owners of cattle could be induced to take the steps which were deemed necessary for this purpose, and he thought this could only be done by preventing the products of tuberculous cattle realizing the same value as those of other

cattle. This could be done by efficient administration. A wholesale system of compensation would remove the responsibility, which the owner should feel, that he must adopt the recognized precautions if he desired to escape loss. No doubt many could ill afford to bear the whole loss, but he thought this could best be met by a system of insurance, which would be managed by stock owners whose interest would be to see that those who insured their cattle did not by negligence bring loss to the fund. He would rather see public money used for encouraging the institution of a system of insurance than given in the ordinary way of compensation.

Alderman Baty (Newcastle-on-Tyne) urged that all cows that supplied milk to the public should be tested by qualified veterinary surgeons, and all reactors should be branded, so that wherever they were moved to they would be known as reactors. The Government should compensate the farmer, as had been done in stamping out foot-and-mouth and other diseases that were not communicable to human beings.

Mr. G. William Lacey (Oswestry) wished to mention in reference to the inspection of dairy cows that some even small authorities were taking this matter up. His own council had recently instituted a half-yearly inspection by their veterinary surgeon of all milch cows in the borough, and also of those in the surrounding district supplying milk to the borough. There being no legal power to do this outside the borough a conference of the cow-keepers was called, who all agreed to accept the inspection of the veterinary surgeon. The result of the first inspection showed that out of just over 300 cows only two definite cases of tuberculosis were discovered, while three other cases were held to be suspicious and were being further examined and inoculation tests applied to them. When the owners of those tuberculous cows were notified, the cows were sold from their herds and left the district to our advantage, but to some one's disadvantage. Undoubtedly, steps to remedy this state of affairs ought to be taken. With regard to one speaker's suggestion to brand tuberculous cows, that might be advantageous, but an embargo would at once be put on the sale of such

cows, and loss to the owner would ensue. That raised the important and difficult problem of compensation, and it would seem that in the interests of public health some compensation should be given for the compulsory slaughtering of tuberculous animals, and that could better be borne by the State than by the local authorities or owners of the cattle.

Mr. Hugh Begg (Lanarkshire C. C.) said that Mr. Simpson recommended the inspection of all dairy herds once a month. That might be possible and advisable in cities, but was unnecessary and impracticable in country areas, where a great many of the herds were young and the distances between them great. In Lanarkshire they inspected every herd once a year, and many of the older herds twice or three times.

He thought that before they urged those in authority to extend to them additional powers to deal with the tuberculous milch cow, it would be well if those authorities who at present took no advantage of the powers they already possessed were forced to do in their own areas the work that was being done so faithfully and at much expense in many cities and a few counties.

If they would come into line there would be less difficulty in ensuring the proper disposal of cows condemned for tubercular disease of the udder, and they could then with good reason urge that compensation should be paid for the condemned cow.

So long as their power was limited to dealing with the tubercular milch cow, there would be a perpetual crop of such animals needing the sickle each year, and, even after years had elapsed, there would be but little improvement so far as their herds were concerned. Veterinary surgeons should press their respective local authorities to undertake conscientiously the work that lay to their hand, and when this was done they might reasonably apply for the money and the power necessary for the complete eradication of bovine tuberculosis, a task which the veterinary profession was capable of carrying out successfully.

Mr. W. H. Brooke (Birmingham) said that Prof. Gunther had remarked that tuberculosis, of all diseases, brought the human practitioner and veterinary sur-

geon together. In the consideration of tuberculosis, which was so prevalent in herds, they had so much in common that a combined action of the two professions, which both must recognize as necessary, was both essential to a comprehensive dealing with the disease itself, and to forcing home upon the Government the absolute necessity of early and effective legislation. Practically all that Government had done had been the ineffective dealing with the tuberculous mammary gland when they knew that affected animals were passing bacilli in the milk in the absence of lesions either in the mammary gland or its lymphatics. The general medical practitioner did not appreciate the importance of milk infection as a source of infantile tuberculosis, and had evidently not realized that in about 13 per cent. of investigated cases bacilli of the bovine type had been found; for even young people, considered to be in the early stages of tuberculosis, were recommended to take cow's milk in large quantities as a diet, and no precaution was taken either to provide for its coming from a tubercle-free source or for sterilization. Surely that was wrong.

Many country cow-houses were a disgrace to modern sanitation, and much good would be done in preventing milk infection if necessary grooming and general cleanliness were attended to; for knowing, as they did, that close upon 60 per cent. of animals affected with tuberculosis had bowel lesions, it was easy to see how readily milk became infected when the commonly filthy condition of flanks, quarters and tails was taken into consideration.

Pending legislation, the Birmingham authorities, on the initiative of Dr. Robertson, medical officer of health, and Mr. J. Malcolm, F.R.C.V.S., city veterinary surgeon, were applying the tuberculin test free of charge to dairies supplying milk for the city's consumption, on condition that the diseased should be separated from healthy animals, and milk from tuberculous animals not sent out for human consumption.

Compensation to one-fourth, with a maximum valuation of £16, for animals which it was considered advisable to destroy, the owner to have the benefit of the discriminate disposal of carcase, was generally accepted.

GENERAL FOOD INSPECTION

By ROBERT AWDE.

This is a subject in which we are all deeply interested. We are so constituted by the laws of nature that we must eat or die, and it is our particular business to see that we do not die, because we eat.

Some one has said, "We are no better than the food we eat and drink." That certain kinds of food do affect the mental and physical condition of men and women is undoubtedly capable of proof, in fact, is so generally admitted that it has passed the region of controversy and stands out in the prominent characteristics of men and nations.

The bull-dog tenacity and indomitable energy of the ubiquitous Englishman; the vivacity and brilliancy of the French; the fertility of mind and wit of the Irish; the thrift, brawn and muscle of the Scotch; the phlegmatic, ponderous German; the excitable and passionate Ital-

ian; the dreaming, love-sick Persian; the gentle and submissive East Indian; the wild, fiery, vassilating Turk; the ferocious aggressive Russian; the alert, initiative and chivalrous Japanese; the patient, impassive endurance of the Mongolian; these all possess qualities or types growing out of their dietetic conditions and environments.

But the finest type of mental and physical manhood will ultimately be found in the newest of nationalities, viz., the inhabitants of that part of North America where the people are called "Canadians." Here, climatic conditions, educational facilities, and a good moral atmosphere conspire to produce a perfect race. It may take six hundred years to accomplish the transformation, or blending of the races, but it will come as sure as day follows night, unless bigotry and prejudice prevent it.

Food inspection is necessarily a very important part of a Health Department, where all its efforts tend to the conservation of energy, the development of the physical and the promotion of the happiest social relations and conditions of the individual, the family, and the community.

The inspector of food, therefore, needs a thorough, practical knowledge of all kinds of meat, gained, it may be, in the slaughter house, the shop, or the packing house; and if with this he has a theoretical knowledge of such diseases of animals as are detectable by the naked eye, appearances in the carcasses brought under his notice, it will greatly assist him in the work.

There is, however, a wide field of inspection, which can only be covered by the skilled veterinarian, keenly watching the processes of slaughter and dressing of the subject for the market. He conducts his post-mortem examination with scientific skill and care, diseases are discovered which in whole or in part, disqualify the meat, which he at once condemns as unfit for food; and yet this meat if dressed and sent to market would, in most cases, never arrest the attention of an Inspector of Meat, as its appearance is normal.

I will not, however, attempt to trespass on this classic ground, feeling assured that the able and learned veterinarians who are to follow me, will, in their lectures do the subject ample justice.

First then, extravasation of blood, if more than local is a condition which calls for special attention. If it be the result of injury it will not be necessary to do more than cut out the part affected, but if the condition be general the meat should be condemned. Effusion of serum or thin watery blood may be general or local; if the latter, inflammation or erysipelas was probably the cause, but if general and the flesh is pale, flacid and slimy, it is unfit for food.

Emphysema, or gas in the cellular tissues, is generally of putrefactive origin, and renders the meat unfit for food. Pyemia is a blood disease, from whence abscesses arise. If local, the part affected may be cut out, but if there be multiple abscesses the carcass should be destroyed.

I have met with the latter condition in hogs only, there being three out of the same herd. Stripping is a term known to the butcher, and is resorted to under three conditions: (1) the pleura is stripped off the ribs to remove tubercular nodules, called grapes, or angle-berries, or military tubercles, small as millet seed; (2) in case of pleurisy, which if slight does not warrant condemnation, and (3) to remove the blood stained pleura when the animal has been stuck through, and has bled inwardly. This, of course, is legitimate. The inspector, however, needs to be careful and not jump to a conclusion that it was tuberculosis that was the cause.

Apart from abattoirs and slaughter houses this terrible disease is most frequently met with in cattle slaughtered by farmers and country butchers. The miliary tubercles, or the more fully developed nodules, are easily discovered, and are generally found on the pleura or diaphragm; and when generalized, in the glands also. Of course the internal organs escape the meat inspector, as he is not in the slaughter house, and this is what gives point and emphasis to the demand for veterinary inspection of all animals slaughtered and intended for food for man. It is a matter of great importance to the City of Toronto that its Medical Health Officer is fully alive to the dangers of non-inspection, and has appointed a staff of veterinarians, devoted to this special work; but the field is so wide and the slaughter houses so many, they are unable to cover all the ground or to meet the necessities of the case.

The only cure for such a state of things is the erection of a large public abattoir, and the closing of all private slaughter houses. To reach this consummation it will require an educative propaganda that will embrace the whole Dominion, resulting in the passing of such legislation as the case demands, giving to Provinces and municipalities power to erect abattoirs, and exclude all dressed meats coming in unless they bear the stamp of legalized inspection.

Tuberculosis, unfortunately, is not confined to bovines only, but is also found in sheep, swine, poultry, milk, and also in rabbits.

As to the use of such meat we have authorities, reaching far back, who assert that the Mosaic laws contained regulations to secure its condemnation; but the Rabbi of to-day is a bundle of contradictions, in which the accusation holds good, "he strains at a knat and swallows the camel." We have seen him "trify" cattle because the lung allowed air to escape by an aperture that a pin might make, or because there was an adhesion by a ligament no larger than a thread. On the other hand he will pass a carcass graped with tubercular nodules because the lungs will expand and hold the wind when blown up, and this distension of the lungs, is by the breath of the butcher, let the Rabbi will permit the Jew butcher to sell it to his customers as "cosha" meat.

Modern science, however, has demonstrated, and by experiments proved, that there is great danger to human beings in eating tubercular meat. In a chart published by the authorities of the Grand Duchy of Baden, and which takes in fifty-two towns, show that where tuberculosis is prevalent among cattle, it is equally prevalent among the human population of that district or town and it is most prevalent in those towns in which low class butchers abound. We may, therefore, conclude that as the spores of the tubercle bacilli require a great heat in cooking to kill them, and as there are always people who prefer under-done or rare meat, it is, therefore, wise and safe to exclude tubercular meat from our butcher shops, our markets and our homes.

Milk also is a most prolific means of spreading tuberculosis, and is, we are glad to say, receiving special attention from the heads of Departments of Health in every city of importance.

Pork.—The *Cysticercus Cellulosa* is found in the connective tissues of the pig, producing what is known as measles. Its progenitor is the *Tania Solium*, or solitary tape worm in man. The flesh of a pig so affected presents a pale, flabby appearance, and feels soft and slimy, but if the disease is of long standing the flesh is firmer, owing to calcareous changes, and it may be detected by a slight grating sensation, as you cut through the cysts, or small chalky-like substances.

When we consider the danger of eating such meat, unless submitted to a temperature 140° to 150° F., it should be condemned. I have met the same conditions in mutton, arising from the *cysticercus ovis*—or mutton measles, which also falls under condemnation as unfit for food. It is always better to be safe than sorry.

The *Trichena Spiralis* is a parasite found in pork, and can only be revealed by the microscope. Its presence is most frequently discovered in the forearm and in the ham, in the former by an abnormal enlargement of the muscle, and in the cured ham, in which the parasite is coiled like a hair spring, by a small chalky cyst. When taken into the human system its rapid increase and circulation through the tissues causes great pain, and often death ensues. You will, however, be glad to know that this parasite is now very seldom met with, but thirty years ago it was very common in American hogs, and was the principal cause of German legislation, regulating the importation of foreign meats. These regulations made it necessary for the United States to adopt the present system of inspection and branding of all meats inspected, in order to hold their foreign trade. Some years later, Canada also found it necessary to adopt the same system, and for this purpose arranged for a body of veterinary surgeons to take a special course in the abattoirs of Chicago, and pass an examination before they could receive appointments as Government inspectors in the various abattoirs where cattle and hogs are killed and prepared for export, whole or in part, cured or fresh, canned or otherwise, and intended for food for man.

The hog is also subject to other diseases, to wit, hog cholera, a disease somewhat like typhoid in man. Hogs dying from this disease handle cold and damp. There is also an absence of set or firmness. Scarletina, or Spanish Fever, is a febrile disease, which leaves disks or patches in the skin, principally along the abdomen. It is, however, a case in which men differ as to whether or not it should be condemned. If you will excuse a personal reference, I may say I once condemned thirteen such hogs, and the owner sued me for \$4,000 loss and damage to his business. The case went to court but

at the last moment withdrew his suit and had to pay \$46 costs.

Swine fever is more frequent, and often fatal. Sometimes the farmer will kill the hog as soon as he sees that it is affected. In this case there is a flabby condition, and streaks or patches of dark color along the abdomen. Young pigs are sometimes affected with rickets; in such a case there is frequently nodular enlargements of the rib bones and softening of the same, the skin is of a dull grey or light brown color, flesh pale and soft. In all cases where these conditions are clearly marked the meat should be condemned. Slink, or immature veal, while we always condemn it as unfit for food, the Jews will eat it without any misgivings as to its fitness. It is certainly not nutritious, and will probably cause diarrhoea.

There are some other conditions not indicative of disease that justify condemnation, viz., animals killed by lightning strangulation, smothered in railway cars or otherwise, or killed by accident, where there has been no opportunity to bleed the animal and remove the intestines.

Fish.—As an article of food fish holds an important place being generally cheaper than meat, and almost, if not quite, as nutritious. It is much sought after, especially by the poor in the Old Land, where herrings are often sold six for a penny, or two cents. In Toronto fish has risen in popular favor to a remarkable degree during the last twenty years. At that time the trade was principally in the hands of one firm, consequently there was no opposition to speak of. Occasionally, in winter, some enterprising individuals would bring up a car or two of frozen fish, fresh from the sea coast, consisting of cod, haddock, and herrings. These were sold from the car or peddled from waggons on the streets at cut rates to the annoyance of the said firm and the small dealers who bought from them and from the local fishermen. There was great excitement for a few days until the cars of fish were sold out, when normal conditions again prevailed.

At that time cod fish, salmon and sturgeon were the only fish cut in steaks for frying. Halibut was as yet unknown. It was about 1894 when this fish was introduced, but the public were slow to adopt

it; prejudice prevailed, and it was looked upon as a man-eating fish. The large size was also against it, some attaining to the weight of 120 lbs., but when it became known that it could be obtained of any size required from "chicken halibut" upwards, prejudice gave way, especially when our fruit merchants, visiting British Columbia and California, seeing the possibilities of trade, began to get small shipments on trial. That was the day of small things, but halibut and British Columbia salmon speedily won their way and to-day Toronto receives about 100 cars of halibut a year and 50 cars of salmon from our Western sea ports. In addition to these we use 50 cars of finnan haddie and fillets, 20 cars of herrings, sea and lake; 20 each of lake trout and white fish; 5 cars each of cod and haddock; 50,000 gallons of oysters; 500 barrels of shell fish of various kinds, and besides all this, an enormous quantity of canned fish of all kinds.

It will at once be admitted that here is a field for inspection demanding the utmost care and attention, and of vital importance to our citizens.

Of Canada a certain poet has said:

"Thy mineral lands in precious ores are
rich beyond compare
Thy matchless lakes with islands gemmed
yield scenes surpassing fair,
Thy forests vast of wealth untold exceed
man's fairest dream,
And all thy lakes and shores and streams
with fish abundant teem.

Such is our heritage, but our neighbors to the south are forever seeking to appropriate these various forms of wealth, and in none have they hurt us more than in the depletion of our fisheries on our lakes and sea coasts. And to-day three-fourths of our best fish are stolen from us by American firms with, in some cases, Canadian crews, who thus defeat the law on the ground that the fish were taken by Canadian and not American fishermen, but they poach also as you will hear.

Poachers Steal 65,000,00 Lbs.

Mr. Clements noted that last year the total value of the fisheries of Canada was \$29,000,000, and that British Columbia accounted for \$10,000,000, or over one-third of this. He told of the halibut poachers—how they number some 200 ves-

sels, how they outstrip in speed the wretched vessels hitherto maintained by the Canadian Government, how they are equipped with wireless telegraphy, how their business is openly prosecuted in Seattle, and how they steal yearly some sixty-five million pounds of fish, or over \$3,000,000 worth. He advocated the provision of three up-to-date steamers of 15 to 18 knots speed. These vessels could break up the poaching, in part by denying to the poachers the use of the bays and inlets where they procure bait and clean and pack their catch. Also Mr. Stevens was anxious that the vessels should not be under the naval service.

You will, I am sure, pardon this digression, as it is somewhat allied to our subject. The European standard of fresh fish and fish inspection is of little value in Canada, except for a few months in summer, when the bright eye shot with blood, the florid and shiny gill, together with the delightful fresh sea smell and the firm touch, indicate a really fresh fish in the pink of perfection.

On the other hand, when the flesh shrinks and marks with handling, the eyes have lost their brightness and are shrunken, gills brown and adhesive, or the rib bones are loose, the abdominal cavities a dull leaden color, and the smell decidedly fishy, there is, for the inspector, only one duty to perform, viz., condemn it.

The above is a fresh fish inspection and no difficulties arise. But in the matter of frozen fish the conditions are very different and difficult, and unless putrefactive changes are evident he cannot condemn, even though the fish has been out of the water five or six months, or two or three years.

Fish kept in cold storage for a length of time will deteriorate in flavor and nutritive qualities, yet climatic conditions must be taken into account, and the best possible, under the circumstances, must be the inspector's standard; yet there will necessarily be grades of low quality that must not pass as edible. In all cases where frozen fish is suspected as being unfit for food it is necessary to thaw it in cold water, when a perfect examination can be made. If the flesh be at all disintegrated it is unfit for food. Last

spring I condemned a car of ten tons of halibut of this character. The freight alone was about \$250, or a total loss of \$1,000 or more. It is important that inspectors act on the principle "Be sure you are right, then go ahead." The responsibility is great in two directions. If a mistake is made, the city is liable. On the other hand hundreds may be made sick by his blunder in not condemning the unfit.

Experience and courage are necessary in all cases, but much more so where large sums are involved, and a heavy loss sustained by the merchant or trader in whose hands the goods are found.

The canning of meat is now almost all done under Government inspection, when the inspectors see the animal killed, watch it from stage to stage until it is sealed down and labelled "approved." It would be well if our fish canneries were under similar inspection. In fact, all canned goods ought to be inspected, both as to quality and labelling, and an act passed requiring the year to be embossed in the metal forming the lid of the can or jar. This simple law would prevent the sale of canned goods two, three or four years old. Here lies the danger of ptomaine poisoning. Canned goods frequently spoil by exposure to the sun's rays or to frost; gases are generated by fermentation, and in meats and fish, putrefactive changes of a dangerous character follow. In such cases the can expands, and what is known as swelled head, ensues, which is easily detected, and of course, condemned. Within the last four years a certain firm have put up ox tongue and other varieties of cooked meats in glass jars, where the purchaser can see what he is buying.

Fruits and vegetables, native and foreign, are very freely used by all and need but little comment, except as to fraudulent packing by the fruit growers who, not satisfied with the large profit from high prices, put small, defective, and even partially decayed fruit deep down in the barrel or basket and select the best for the top, and the innocent, honest farmer will bag up potatoes the size of walnuts, with two or more pounds of his real estate to make weight.

Poultry affords a delicious and delicate variety of food suitable for the sick, the young and the old, and a few years ago we could have written, enjoyed by the poor as well as the rich. But alas, the days of cheap poultry are gone forever. Within the last ten years the price has gone up more than threefold.

Like all other animals, poultry have their diseases. The lordly turkey is subject to tuberculosis, as is also the hen. Roup or croup are common to both, and is undoubtedly of a tubercular character, though once thought to be diphtheretic, and certainly to the naked eye has that appearance; both should be condemned.

We need a law requiring farmers and others to fast their poultry at least twenty-four hours before killing them; if well supplied with water the crops will be empty, and flesh much improved, and the keeping quality very much prolonged. In fact, a fowl well fasted and carefully dressed, so as not to tear the skin, can be kept in an ordinary cool airy cellar for three weeks, and be improved thereby.

Poultry is often spoiled by being packed and shipped before the animal heat is out, and the flesh set; in such cases, there is a light green shade along the sides, and a deeper color of the abdomen; the smell is unmistakable, and the flesh unfit for food. Geese and ducks are on the whole free from poultry diseases, though sometimes I have found a goose having tubercular nodules in the intestines.

Game.—It has always been a puzzle to me why there should be one standard for

judging game, and an opposite standard for meat and poultry.

The aristocracy and gentry of England have their venison hang until green and tainted, and their other game and pheasants till the feathers begin to drop, together with maggots, lusty and long. I have witnessed such sent to table with the flesh partly consumed, and maggots were numerous in the gravy on the dish.

These so-called delicacies are usually accompanied by liberal potations of wine, perchance some rare old vintage that has lain in the bin for fifty years, and is only produced on special occasions, such as a birthday banquet, or when the castle is full of noble guests at the shooting season. When the feast wanes, and wine and fruit alone remain, and ladies have retired, then memory's store is drawn upon, with stories of the chase, or episodes of some hair-breadth escapes from the stray shot or accidental discharge of a gun in the hands of some town-bred novice, with wit and humor flies the passing hour. Perhaps the Vicar, or His Grace of Peterboro is an honored guest. If so, his presence gives poise to the conversation of the hour; but the riches anecdotes will be drawn from his ample store, told in the most chaste and pure English, yet full of wit and humor, and withal perhaps a moral to adorn the tale.

We will leave them to the enjoyment of their gastronomic and intellectual feast, hoping they may not suffer gout from the violation of natural and sanitary laws by eating that which we on this continent would most certainly condemn.

THE COMMON HOUSE ROACH AS A CARRIER OF DISEASE*

By R. C. LONGFELLOW, M.D.,

Professor of Biology, St. John's University, Toledo, Ohio.

During the past six summers, when a little time could be stolen from the routine service, a number of experiments were made with the common house roach, as one of the insecta class belonging to the phylum arthropoda, the six-legged type of house insects.

As these common house roaches feed upon all kinds of bread stuffs, milk and its products, water, clothing, cooked foods, migrate from one apartment to another following water and drain pipes, from cellar to living rooms, intermingle with others of their own and other types of in-

*Paper read before the Public Health Association, September, 1912.

sects. I selected these for the few limited experiments of which I made a preliminary report.

Limited time will only admit of the most brief mention of the findings from these studies, all technic and details must be excluded, the actual results only recorded. Among the first experiments made with the common house roaches, was the placing of four in different sterilized flasks, allowed to remain for 48 hours, then removed, and nutrient bouillon run in, incubated.

The resulting growth plated out on different media, resulted in the demonstration of the *B. coli communis*, *B. Proteus vulgaris*, *Staphylococcus aureus* and *citreus*, and a bacillus of the *subtilis* type.

This indicated that the roaches carry infection on their legs and feet, and the problem of what their faeces contained was next considered, and ten roaches secured, the legs of five removed, dropped in nutrient bouillon, the flasks numbered, and each roach dipped in bichloride solution, dried in sterilized flasks, the body opened, and with the platinum needle loaded with the visceral contents, flasks of bouillon were inoculated, numbered, so that each set of legs and its body could be investigated.

The same general type of bacteria was developed, isolated and identified in the plates of both the legs and visceral contents of each roach, but in the visceral content of roach number 4 a streptococcus was isolated, that hemolysed human blood, thus proving its virulency.

These results indicated that the bacterial content on the feet was the same as in the faeces, and to ascertain if the roaches devour the faeces, of one another if starved, the following experiment was tried.

Ten roaches secured, kept in sterilized flasks, and at end of the third day, five were fed upon few drops of a bouillon culture of *B. typhosus*, then placed in sterilized flasks for three days.

Meantime, the flasks of the other five roaches were washed with bouillon, and plates gave no cultures of *B. typhosus*.

The control roaches were placed in the five flasks that had contained the five roaches fed upon the bouillon, with no food, and allowed to remain for three days, their feet and visceral contents of each roach on plates gave the *B. typhosus*

with other ordinary bacteria previously found.

This experiment proved that the roaches when starved, or not starved, will feed upon the faeces of their own type of insects and not unlikely of all other types met with in their migration from one locality to another.

To ascertain further, the possibilities of infection carried by the house roaches, ten roaches were secured, five were kept as controls, all secured from one source and pantry. Five roaches in different sterilized flasks were fed upon coagulated sterilized egg albumin, inoculated with a Westbrook's type of *B. Klebs-Loeffler*, sent me a few years ago by Dr. William Royal Stokes, from his laboratory cultures. From the legs and each of these five roaches fed on the inoculated egg albumin, the Westbrook's type of diphtheria bacilli were recovered, and from the five control roaches no bacteria of the diphtheritic type were demonstrated.

In like manner, five roaches and five control roaches were fed upon sterilized bread, inoculated with *Streptococcus pyogenes longus*, and this type of streptococcus recovered from the legs and visceral content of each roach.

That the virulency of the streptococcus was not diminished by its passage through the roaches was proved by the hemolysis of the culture before being fed to the roaches and the recovered strain was unattenuated.

Chromogenic bacteria were next tried, the prodigiousus, the violaceus, the pyocyaneus, the controls free from these bacteria and the inoculated roaches demonstrating these individual bacteria from both the feet and visceral contents, associated with other ordinary bacteria.

More difficult were the experiments with the pneumococcus, but small bits of a blood agar culture were exposed to ten roaches, whose previous cultures from feet and faeces were negative to the pneumococcus.

Sterilized camel's hair brushes, dipped in warm sterile water, washing off the feet and abdomen of each roach, streaking the surface of plates, the media being sheep serum, human blood with one per cent. glucose, coagulated, sterilized by lower temperature for longer period

Of the ten plates inoculated, but three demonstrated pneumococcus colonies, with the other ordinary bacteria. The bodies of the ten roaches after being opened up and smeared along the surface of similar plates, resulted in from few to a number of pneumococcus colonies from each body.

Similar experiments were tried with the meningococcus, but while few plates demonstrated a colony now and then, the results were not as decided as with the pneumococcus, probably due to the meningococcus being so easily killed and the body warmth of the roach less than required to grow this type of bacteria.

I have not had the time nor opportunity to investigate the possibility of other pathologic bacteria, but have proven that the common house roach does and can carry all of the common pathologic bacteria of the acute infectious diseases, as well as any bacteria that can be met with in the roach's travel, and any bacteria that can survive the environments of the roach's diet and habits.

These house roaches, or any of their type of wandering insects, living as they must on what they find, feeding upon all kinds of food, depositing their faeces along the route, gathering up all kinds of bacteria on their feet, feeding as is shown on the faeces of their type and others, become laden with all types of pathologic bacteria.

All the bread stuffs, milk and its products, cooked foods in open dishes, in cellars, pantries, shelves, kitchens, are open to these wandering roaches, which, passing over the foods, leave deposits from their feet and faeces, bring direct to the consumer any or all pathologic bacteria that a roach may encounter in his journey.

The temperature of the months that render the roaches active, is also favor-

able to the growth on some cooked foods, milk or vegetables that are eaten raw of any or all bacteria deposited.

Those vegetables, foods, meats that are cooked, just before eating are harmless because of the sterilization during cooking, but especially are the dangers of these roaches about the restaurants and hotels, which are never without them the year round.

I have never had the opportunity to investigate the roach and some parasites, which is an unknown question, as regards some of the pathologic types and may not be a source of danger.

This brings up an important matter as to the transmission of *B. tubercle*, from sputa deposited in damp, dark places in cellars, kitchens and restaurants, more than in private residences.

Such transmission of *B. tubercle*, taken up from sputum, deposited by both the feet and faeces of the roach on certain cooked foods, which are eaten without again being heated, as so often occurs in the summer months, is entirely within range of possibility. It seems a question of whether the roach will feed upon the sputum, may not unless starved, yet may live upon the sputum, wherever found in its wanderings. Whether the environment of the roach's viscera is favorable to the living *B. tubercle* I am unable to say, but might be worth investigation. The common house fly, loaded with all kinds of bacteria, benign and pathologic, coming in from the street dirt and manure, to sit on and walk over our food stuffs, water pitchers or sugar bowls, offers no more danger from acute infectious diseases than does the common house roach, running over our foods, vegetables, breads, cakes and water utensils.

HEREDITY AND PUBLIC HEALTH

By A. P. REID, M.D.,

Provincial Health Officer, Nova Scotia.

No matter how varied may be our excursions in the domain of public health at every other corner we find ourselves up against some of the forms of heredity,

and what do we know about it? I regret to have to say we have but few facts and these are tossed about on the waves of a fanciful sea—disjointed, het-

erogeneous and contradictory—so that the few floating specks of truth are almost intangible in the mass of theory, and it is desirable that we should dissociate much from fancy—that in our progress on an uncharted sea we know the declinations and can guide ourselves on a probably true course. This subject is one of surpassing interest in every way that we may look at it, and has commanded from time immemorial the brightest intelligences of humanity. I have waded through the morass of theory and speculation until my limited ability became entangled and engulfed, and I gave it up. But to give up in any exploration means failure and worse, so that after rest and cogitation we should gird up and push along.

Of the multitude of able minds that have pursued this investigation, there are no two that agree in the details of the subject, and I think it is a safe prediction that they never will, it is too recondite; all that we can hope for is the fixing of a point here and there that may serve as an anchor to steady our efforts in ameliorating some of the difficulties under which we labor. When we consider that microscopic entity, the germ, and its enormous potentialities we must stand aghast. This entity from which can be built up the minutest bacillus or micrococcus, to the towering tree or the elephantine animal, which grows true to its race in every detail, and more wonderful still sets aside a part of itself which can be indefinitely multiplied and hand down to untold generations its most intricate peculiarities. As has been said, protoplasm or germ stuff or material never dies, or a portion is set aside for reproduction, and so it may go on interminably. The first effort of growth is to set aside a part of the germ itself for future reproduction and then begins the work of growth and development of the individual that is to serve to carry on the future of the species, and so it continues.

Just here we may digress to refer to some of the fool notions that obsess many minds, the agnostic or modern in thought, surrounded on all sides by most astounding miracles, who disbelieve in miracles and have no faith in anything our puny minds can not understand. The truly scientific mind becomes the more

humble as it comes in contact with and can survey the boundless realm of Nature's God and can exclaim with Sir Isaac Newton, "I feel but as a child playing on the sea shore and picking up pebbles with the boundless ocean of Nature spread out before me, and its exploration yet to be." In like spirit, consider the response of the immortal Louis Pasteur, who opened up to us the microscopic world and its enormous influence on all forms of life—a would-be scientist and exponent of so-called modern thought in conversation with M. Pasteur, said: "With all your recondite discovery and observation you cannot believe in modern miracles and those recorded in the Bible." He replied: "all the miracles to which you refer are as nothing compared with the astounding miracles that are all the time taking place around us and everywhere."

As a counterpart we have the scientist and biologist who affirmed that the eye was not a perfect optical construction, and that he could make a better one, and this in view of the fact of the varied condition under which the eye functionates, it is the most perfect instrument conceivable, and so we might go on.

It would be useless, had I the ability, to attempt a resume of the ideas suggested by heredity—the one that held sway for a long time is now on the wane. In this it was assumed that the germ was composed of gemmules each of which had within itself the atoms required in the fabrication of the new being.

Theory is assumed to be a stringing together of facts fairly well known supplemented by suppositions creations that it is assumed will cement the diverse elements into a homogeneous whole, and these are as varied as are the individuals that create them. Too often theories have been will o' the wisps, and the further they are followed the deeper the quagmire. But proven facts are as the fixed beacon on an unknown land, something tangible and a possible point of departure for a desired object that may be desiered in the distance.

In this sea of doubt heredity, one beacon has been discerned, but for 35 years it cast its refulgence on a blind scientific world ere its rays were appreciated.

Gregor Johann Mendel, priest and Abbot of Brun in Moravia (born in 1822, died in 1884), began a series of experiments in the monastery garden, which were published to the world in 1865 under the title of "Versuche über Pflanzenhybriden." These were conducted for eight years until the closure of the monastery by the Austrian Government, which put an end to his experiments. These researches passed unnoticed by the scientific world for 35 years, until H. de Vries in 1900 brought them to public notice along with his own valuable researches. Mendel's theory may be, but his facts never have been disputed, but they have been frequently confirmed. The Mendelian system now holds sway in the scientific world.

With permission I will give a short resume of his experiments. It is the general belief, and in all probability it is correct, that the laws of heredity in the vegetable kingdom run in lines parallel to those of the animal kingdom, and Mendel used the common pea plant (*Pisum Sativum*) for his experiments and in this he was favored by the sharp line of demarcation of species, facility of manipulating, few disturbing agencies, rapidity of growth and facility for varying methods of handling, with no interference of a nervous system, a most disturbing element in experiments on animals. He chose two easily differentiated species—the *tall* and the *dwarf* are the only ones we will refer to. Before commencing to describe, it might be well to define the meaning of some specific terms, that may not be found in dictionaries, and thus facilitate the understanding of a somewhat intricate subject.

Dominant—when one type preponderates in influence on the hybrid.

Recessive—the form exercising a lesser influence.

Gamete—the sexcell, the agency furnished by either parent, which has the same properties whether furnished by the hybrid or the pure type. The pogenous theory assumed that this sexcell when hybrid may be an agglomeration of the elements from the two sources, and may incline to one or the other form in reproductions. Mendel's experiments would show that in the hybrid the sex cells are

pure of their type whether originating from a pure or hybrid source and impress their characters on the progeny, the hybrid sex cell is either dominant or recessive, not a mixture of both.

Homozygous—where the gamete from the two sexes are similar and they breed true indefinitely, hence hybrids may have a progeny to breed true of either type.

Heterozygous—where the gametes from either parents in hybrids are dissimilar, the result is very different from the homozygous.

Unit characters—characters that do not blend.

Zygote—the developed plant or animal hybrid or otherwise.

Mendel's Experiments.

He divided the varieties of the pea into seven groups, each group made up of two varieties, absolutely identical in appearance and differing only in one easily recognized character such as, shape of seed, color of seed, or length of stem, etc. The results in all the groups were strictly comparable and in every respect analagous.

We need only refer to one group where the only difference was length of stem, 6 to 7 feet in the case of one and 1 to 1½ feet in the other (*tall* and *dwarf* varieties). On crossing a *tall* one with a *dwarf* he found that the hybrid (zygote) was a tall plant to all appearance, like the tall parent. On further investigation while he found that the tall (dominant) plant always bred true, self fertilization of the hybrid (zygote) gave origin to dwarfs as well as tall plants. Of this first generation from the zygote the dwarfs bred true like their ancestral dwarf, while the self-fertilized tall ones again produced dwarfs and tall just as the original (zygote) hybrid had done. The same phenomenon was reproduced in all subsequent generations—there was always a certain numerical proportion between tall and dwarfs—three to one. It was obvious that the tall were not a pure strain and Mendel found that only one-third of them were pure. In each generation from the first hybrid, there were 25% of pure dwarfs and 25% pure tall, and 50% impure tall or hybrids. It is to be specially noted that the progeny were either tall or dwarf, there was no tendency to compromise of length of stem. To such

peculiarities Mendel applied the term *unit characters*, that is, characters that do not blend, which either exist or do not exist in the adult plant. It is also clear that of the unit characters, dwarfness and tallness both do not exhibit the same power, the former is termed recessive and the latter dominant. From these observed facts Mendel framed the following theory to explain them.

Mendel's Theory.

He assumes that every gamete (sex-cell) was made up of two parts. These parts might be similar to each other or they might be different. Two gametes join together to form the fertilized ovum and ultimately the developed plant or animal (zygote). If the parts of the gamete are similar and two similar gametes join, the resulting zygote is homozygous, but if the two gametes are different the zygote is called heterozygous. The former breeds true indifferently, not so the latter. The zygote of first generation is made up of dissimilar gametes one from the tall, one from the dwarf. In the gametes formed in the progeny from this there is a re-arrangement of these elements so that the gametes are formed of two tall or two dwarfs, but not of a tall and dwarf conjoined. On self fertilization a tall gamete may meet another tall gamete, and so produce a pure tall zygote, or a dwarf gamete meet its like and so produce a pure dwarf zygote. If a tall gamete meet a dwarf gamete, this leads to a heterozygous zygote, similar to the zygote from which it sprang, the result of the first union of tall and dwarf. With an equal number of tall and dwarf gametes the chance of the occurrence of the forms T-D and T-D (T-tall-D dwarf and T.D. their union) may be represented mathematically by the formula $(T+D) \times (T+D) = T_2 + 2TD + D_2$ and as T and D are from hypothesis equal then the numerical relationship between T and TD and D are as 1:2:1 which is the proportion found in the observations above detailed.

The peculiarities of humanity even on its scientific side are a little difficult to understand. Mendel's most remarkable paper was totally overlooked, and entirely forgotten for 35 years, and now it dominates the world of thought in these lines and bids fair to do so to a still great-

er extent as it embraces the laws governing plant and animal life as well. Like many other discoverers he was ahead of the times.

The theory of gamete segregation opens up two fields for future study, atavism explaining its probable production, and when we know more, of it is regulation or suppression; and hereditary degeneracy, a most important factor not only in eugenics, but the colossal tax which is thus imposed on all civilized communities with which is associated misery, sickness, pauperism and crime. Common knowledge as well as theory teaches that the progeny of defective parentage does not tend to improvement to any marked extent but a superior mated to an inferior may reproduce superior as well as inferior types. This is a common experience, take insanity as an example. In the progeny where one parent has an insane strain there may be a child who is perfectly sane though the other members may be defective in varying degree, and were we to assume that society was able to segregate all its defectives and their progeny, there would be a percentage (on development) not demanding custodial care, and able to take their places as ordinary members of society.

However, the whole subject is subjective and its probabilities can not yet be formulated. But when a definite and probably correct line of study and experiment is instituted we may be able to solve the most difficult and perplexing questions that society has to deal with the extinction of pauperism, preventible sickness, constitutional debility, moral perversity and crime. The most promising field at present for Mendelian research, and which is being developed, is in the vegetable world, not only to make two blades of grass grow in place of one, but also each blade to be superior in quality and productiveness. Humanity is demanding more produce for its support than the lessening returns from the fields now supply, which means higher cost of living or a lower standard of public health. With a more accurate knowledge of heredity we can more intelligently follow lines of betterment in any of the many lines of endeavor, all of which tend to the development of the race on higher planes.

WATER DIVINING*

The Dowsing Rod in Sweden.

By DR. S. ALTRUTZ, Upsala.

The dowsing rod has been used for many years in Sweden, partly for discovering the position of metal ores and partly for finding springs of water. The dowsing rod has been in great request for the latter purpose; in most districts in the country are to be found one or more water diviners whose help is either sought in the first instance or after other means have failed.

Interest in the dowsing rod has lately become very keen. The daily papers have opened their columns to numerous discussions—the contributions being mostly of a sympathetic nature—and interesting facts with regard to methods employed, faults, etc., have been published. A proper official decision has, however, not been arrived at.

The investigations, which I was in a position to conduct myself, treated only with a certain portion of the question. I wished to prove partly (1) that the direction in which the dowsing rod moves is determined by outside causes, and that consequently the variations, which are so easily observable are caused by different methods of holding it and the different lie of the land in respect to the probable underground stream of water; (2) whether the movement of the dowsing rod, at any rate occasionally, is of such a nature that it cannot be caused entirely by the conscious or unconscious action of the muscles or with or without influence occasioned by the force of gravity.

Direction of the Movements of the Rod.
—A water diviner A. holds the twig (a wooden one when he is in search of water) straight up. If A. goes vertically to a probable underground stream the rod begins to bend forwards from the bottom at a certain point, and when he arrives over the channel it is quite upright. From whichever side he approaches the underground stream the twig always commences to turn at the same distance from the water. If A. goes backwards, the rod bends forward from the top. If, on the other hand, A. goes away at right angles

from the channel, the rod at first begins to bend from below, but then remains stationary, and finally returns to its first position—or nearly so, as it has slipped somewhat between the fingers. A. usually finds the point where two channels cross, and it is here that the well is sunk. Another water diviner B, on the other hand, holds the rod downwards. In proceeding at right angles towards a stream the rod bends forwards and upwards until B. is standing directly over the stream, when it points straight down. If he walks further on it moves backwards and upwards until a certain point is reached, when it again points straight down (end of the influence). If he goes up the stream the rod bends forwards and upwards until it reaches a certain angle, and then remains in this position; if B. walks down the stream, then the rod goes backwards and upwards until it reaches a certain angle, when it again remains constant, and so on. Again, it appears as if the stream had an attraction for the rod which is expressed in a different way, and exactly in the way one would expect. The differences to be observed between A. and B.'s results are explained by their different methods of holding. A. tries to hold the rod rigidly, which B. does not do.

After I had proved the results obtained by B. to be correct, I asked him to hold the rod straight up and to approach the stream at right angles. The rod bent forwards and upwards to an angle of about 45 deg., but on being held above the stream assumed a vertical position. On walking further on the rod bent backwards and upwards at an angle of about 45 deg., and then again resumed its vertical position. On walking directly above the stream in the same direction as the current, the rod bent slightly forwards and downwards, and on walking against the current it bent slightly backwards and downwards.

This was therefore a striking confirmation of A.'s results. I may add that neither A nor B had read any literature on the

*From the Sanitary Record.

subject which might have given them any information, and also that they arrived at their results independently. B. also found the point where two streams crossed and there had a well sunk.

A third person C. who had by chance made the discovery that he could use the divining rod, held this upright, and it always bent forwards and downwards, i.e., when he approached a stream at right angles. C., however, told me that he had heard of a man with whom the rod bent backwards and downwards. C. thought, therefore, that it bent in different directions with different people, which was accounted for by the varying polarities of these people. I did not reply to his remark, but asked him to walk away from a stream already discovered by him. To C.'s great astonishment the rod now bent backwards and downwards. This happened again with similar tactics in another place. Thus C.'s idea was the opposite of the truth, which only shows that hypotheses are not explanations.

A fourth person D. held the rod horizontally. On approaching a stream it inclined downwards, and after the stream was passed it pointed backwards. D. used a pine twig on this occasion, which appeared to be very inactive. In going with the current the rod pointed downwards; in going against the current it first bent down and then backwards (about 45 deg.). The difference between the various motions was more accentuated when a willow twig was used.

A fifth person E. held his rod straight up, and in the experiment which I instituted I saw that it bent forwards and downwards. E. now wanted to stand still, but I asked him to walk further on—which he was not in the habit of doing; he was quite a novice, having only used the rod two or three times previously. The rod now bent backwards and upwards, and finally it pointed straight up.

The examples quoted are sufficient to show that the various movements of the dowsing rod show similarities in the hands of different persons which can hardly be caused by the agency of these persons. The experiments point to some external cause.

It is a well-known fact that the movements of the rod are at times so powerful that the operator cannot prevent it, how-

ever much he tries to do so, from, say, inclining (bending?) downwards; the rod can, however, swerve while such an experiment is taking place, and this is a strong proof that involuntary movements of the muscles caused by suggestion do not cause the motions of the rod, for in physiological psychology no manifestations of such a nature and of such power are known which cannot be lessened or prevented by movements in an opposite direction.

I have also conducted experiments in which I asked the dowser to hold the rod in a manner which was certainly uncomfortable for him, but this made no difference to the movements of the rod; it was only more difficult for the dowser to hold the rod firmly.

More decisive experiments may be conducted to prove the following remarks: If the movements of the rod are due to motion of the muscles, then it is clear that not only that portion of the rod held between the hands (the point of the rod) must bend, but the portions which are not between the hands must also bend, i.e., the free ends of the rod. If, on the other hand, the movements of the rod are due to some external cause which gives the same result as when the rod was held at the point and pulled downwards, then only the point ought to bend if the dowser holds the rod at the bending point as firmly as he can, but the free ends must remain in vertical surfaces which are held perpendicularly against the plane of the rod. Small vertical pointers (?) are fastened to the free ends of the rod, and it is thus easy to observe whether this really takes place.

I have observed that the rod will swerve from an upright position to an angle of about 60 deg., the pointers retaining their position in the above-mentioned surfaces. After this angle was reached the impetus was so great that the dowser could not prevent the free ends bending to a certain extent.

If the dowser used a rod of copper wire, the foregoing events happened in the same manner. Also it might be remarked that the wire not only bent in such a manner that we could see no assisting movement on the part of the operator, but also when he let go of the rod the bending continu-

ed and could thus be proved to have actually taken place, and also studied at leisure.

It is quite unnecessary to add that this cannot be imitated, least of all by myself. Other tests of a similar nature may be made. I cannot on this account, however, agree with the opinion of Professor Sir William Barrett that the movements of the divining rod are due to a form of clairvoyance which gives rise to an involuntary movement of the muscles and that this occasions the movements of the rod. He also opines that the direction of the movements is due to a conception thereon which the operator has previously made.

Dr. Forbath, Budapest, contributes the following to the same number of the journal:

"I have had no personal experience with the dowsing rod. Writings on this subject, however, go to prove undoubtedly that the movements of the dowsing rod are accepted by serious and unprejudiced men. In the course of time I have also given up considering matters impossible

or non-existent, because they are improbable. I am much more inclined to believe that there are many things in natural history for which we are able to give no explanation even at the present time. It appears, therefore, to be only right that when men of science enter thoroughly into the question of the divining rod with unprejudiced minds that those who have neither inclination, time, nor opportunity to do this should await the result of these inquiries. It is, perhaps, at the present time too premature to speak of the scientific or strictly practical value of the divining rod. The question is still too obscured, and too much subjected to the influence of individual human agency for this to be possible. I can only give my opinion of a solution of the problem when instead of human agency, mechanical dependable measures can be shown on an instrument, the connection between the probable underground water, ores, etc., and the movements of the rod. Before this has been done a satisfactory explanation will probably be found for the cause and character of this connection."

THE PURIFICATION OF THE WATER OF SWIMMING BATHS*

Report of a Committee of the Royal Sanitary Institute, consisting of Louis C. Parkes, M.D., D.P.H., Chairman; Philip Boobyer, M.D., M.S.; Col. J. Lane Notter, M.A., M.D., R.A.M.C.; S. Rideal, D.Sc., F.I.C.; A. Saxon Snell, F.R.I.B.A.; H. D. Searles-Wood, F.R.I.B.A.; and W. C. Tynedale, M.Inst.C.E. November, 1912.

The water of swimming ponds, which are frequented daily by many bathers, becomes highly charged with bacterial organisms as a result of such use. Thus it has been found that a fresh-water pond containing 100,000 gallons in use for one day only, but which had been used by 380 bathers, contained 342,400 bacteria per cubic centimetre of water at the end of the day, the average number of bacteria in the clean water used to fill the pond being less than 500 per cubic centimetre.

No doubt the great majority of such bacteria, which must have been in large part

derived from the bodies of bathers, are harmless non-pathogenic organisms. But there will always be a certain residuum of organisms which have disease-producing powers when placed in an environment suitable to their growth and development. The water of a muchused swimming pond must contain organisms from the mouth, nose and throat, and probably also from the intestinal and urinary tracts of the bathers. Dr. Graham Forbes has identified in the water of a used swimming pond, organisms derived from the skin and from the saliva of bathers, and also the characteristic organisms of the bowel. When highly diluted and intermixed with the large volumes of clean water, these possibly harmful organisms, even when swallowed by bathers, are probably too few in number to originate disease. There is, at any rate, very little, if any, evidence at present pointing to such diseases as enteric fever,

*From the Sanitary Record.

scarlet fever, diphtheria, sore throat, influenza, tuberculosis, ophthalmia, nasal catarrh, otorrhoea, measles and whooping cough being originated in this manner.* Having regard to the large numbers of children using public swimming baths, many of whom must be very susceptible to the infections of one or another of these diseases, it is surprising that no evidence of such a mode of transmission should have been forthcoming, if infection at swimming baths was at all a common occurrence.

On the other hand infection may occur occasionally, and the mode of transmission may not be recognized, as the act of bathing in a swimming pond would not be thought of at all in this connection.

There can also be little doubt that not all the bacteria derived from the bodies of bathers are likely to be distributed evenly through the bulk of the pond water. Many of them are entangled in tenacious mucus from the nose and throat, which is not at all readily broken up and intermixed with large volumes of water. It is quite easy to conceive that an unfortunate bather might receive into his mouth, and swallow the recently ejected mucus discharges from a person suffering from sore throat or influenza, or recovering from these or other diseases, and as a result fall a victim to the disease. In such a case quite a massive infection would be produced, and the belief that extreme dilution of harmful organisms would prevent any possibility of infection would be unwarranted.

The noses and ears of bathers may very easily receive infection in a similar manner, and catarrhal or septic conditions supervene.

That some of the bacterial impurity of the pond water is suspended in solid matters is evident from the formation of scum in water which has been bathed in, this scum floating on the surface of the water. Slimy sediment and slimy deposits are also to be found on the side walls and the mucus and epithelium from the bodies of the bathers. The water, too, becomes opaque, the opacity being due to minute particles of organic matter with their associated bacteria. The water loses its fresh smell, and in time will develop the distinctive odor of humanity.

The warmth of the water (70 degrees F. in winter) is very favorable to the multiplication of bacteria, and this possibly ac-

counts for the large numbers found in the water of a pond which has been in use for some days.

As a result of these changes in the water, apart altogether from the question of infection, an unpleasant smell becomes noticeable in the air over a swimming pond, and this, with the associated warmth of the bath and the general absence of efficient ventilation, causes the lassitude and weariness so often complained of as following a swim in a public bath.

The rapidity with which swimming pond-water will become polluted must naturally depend not only on the numbers, but also on the class of people who make use of it. A pond which is bathed in by persons who never have a bath at home, and who spit and urinate in the bath water, will much more rapidly deteriorate in quality than the first-class pond which is used only by cleanly persons.

There can be no doubt that where a pond is extensively used by uncleanly persons, the water should be changed daily, and the walls and floor of the pond freed from sedimentary collections. Ponds used by girls and women, for reasons which need not be particularized, require to have the water changed more frequently than where males only are accommodated. In no case during the summer bathing season, when large numbers are using the baths, should the pond water be changed less frequently than every other day.

This constant change of water implies heavy costs, and various systems have been recommended and practically applied for submitting the water to some purifying process so as to obviate the expense involved in frequent changes of water.

From the evidence collected by the committee it would appear that the "continuous aeration and filtration" plants,* now so largely adopted, are effective to a certain extent in preventing the gross pollution that results where a pond water is in continuous daily use without change. The higher grades of bacterial pollution are prevented, and the water is maintained comparatively clear and free from odor, but there is nothing approaching sterilization of the water, nor is the latter free from turbidity. It is evident that the comparatively small amount of aeration the water of a pond can be submitted to by this process, and the limited capacity of

the filters through which the water is strained, can have no very great effect if restoration of the water to its original state of purity is the object aimed at. That these continuous aeration and filtration plants have a very considerable effect is undoubted, and they enable a swimming pond to be used without any apparent bad effects for a very considerable time without a complete change of water; but it must not be supposed that the water is necessarily of so good a quality as that which comes in from the mains of a town; and it must also be remembered that, if the water of a pond is changed only at long intervals, there will be considerable aeration of slimy matters on the walls and floors, which is a very undesirable adjunct of a swimming bath.

The committee has also investigated the treatment of bath water by electrolytic fluid, which is in use at the Poplar baths, and was very much impressed with the good results obtained. By the addition of hypochlorite of magnesia solution to the pond water in amount sufficient to give one part of free chlorine to every one or two million parts of water, not only is the water sterilized, or deprived of all organized living molecules, but it is kept sweet and free from odor, and there is no tendency in the water to the deposition of slimy sediments on the floor of the pond. A certain amount of slimy matter collects on the walls of the pond at the line where the surface of the water is in continual movement from the undulatory motions induced by the movements of bathers, but

that is readily removed with a swab by an attendant.

At Poplar, the hypochlorite of magnesia solution is prepared by the electrolysis of Water Board water, containing certain definite proportions of sodium chloride and magnesium chloride. An elaborate plant has been erected, as the electrolysis fluid is largely used in the Borough of Poplar as a disinfectant. Sea-water would serve equally as well for the manufacture of hypochlorite solution, as its chief constituents are the chlorides of sodium and of magnesium. It is quite unnecessary, however, to erect a plant for the manufacture of hypochlorite solutions, as these can be obtained as commercial products from the manufacturers of chlorinated disinfectants.

It should be said that the electrolytic fluid in the Poplar Baths is not used with idea of rendering unnecessary periodic changes of the pond water, but to keep the water in the pond fresh from harmful organisms all the time it is in use. The class of persons who use the swimming ponds in Poplar is always likely to contain uncleanly or infected individuals, and it is to guard against danger from the latter that the fluid finds its chief application.

At Poplar the electrolytic fluid costs in its preparation about £2 per 1,000 gallons, or a little less than 1½d. per gallon. Thirty gallons are added to a swimming pond of 85,000 capacity on first filling, and subsequent additions are made as required, at intervals of two or three days. The bath is emptied weekly or every ten days.

A PLAN FOR THE BETTERMENT OF THE ECONOMIC CONDITION OF MEDICINE*

By E. ELIOT HARRIS, M.D.,
New York City.

The necessity for a careful reconsideration of the duties and obligations of the medical profession, is evident from the lack of reciprocal co-operation, and from the need of such co-operation to alleviate the hardships which both have too long endured.

At the present time, even those who are not close observers can readily recognize the wrong in the relation of the profession

and the public to their duties and obligations to each other. The public has the right to look to the profession for enlightenment and direction on matters on which the doctor of medicine is an authority.

As far as the medical societies are concerned, they have met the scientific situation successfully; but they have failed on the economic side of medicine which may be called practical medical sociology. The

*Read before the Medical Society of the County of Kings, at Brooklyn, October 15th, 1912, and with additions before six Medical Societies in Greater New York.

profession has suffered from the want of careful research work in economics, from the lack of such work as has produced the wonderful progress in the science of medicine.

No satisfactory progress can be made until the archaic method of including the economics of medicine as an appendix to the efficient scientific society is discontinued and the profession is made to understand that in the light of modern sociology, there has been no organized direction of the economics of medicine.

Shall we do nothing but wait for the aggressive encroachments of those who would socialize medicine as is foreshadowed in England, or shall we be factors in shaping the course in advance, in preventing offensive legislative enactments and in modifying the crushing effects of our economic folly. It is a well recognized principle in philosophy that an irrational altruism results in an unscrupulous egoism. The shadow of this truth in medicine we believe can be seen by those who look and understand. We see it appear as an able practitioner who does not earn an income consistent with the professional standard of living, resorting to fee splitting; it is shown in questionable lodge and contract practice and other forms of commercialism. The following editorials from the New York Times of recent date, may illustrate my meaning of this phase of the economics of medicine.

The first is headed:

"Black Sheep in the Medical Fold."

"Whether or not all of the so-called lodge doctors are as ignorant, and, therefore, as incompetent as they were said to be in the letter from Dr. Chas. Reynolds, printed yesterday is, of course, a question not to be answered by laymen, perhaps not with absolute certainty by the best informed of professionals. Settlement workers, who have opportunity for studying conditions are agreed that, of the troubles of the poor many of the most serious are due to the failure to receive from lodge doctors whom they so often patronize the advice and treatment needed by their maladiers. Deaths and chronic invalidism are the frequent results, and these aggravate the consequences of the poverty that led to the establishment of the system under which the lodge doctor works. Often his ministrations are worse than

none. For this evil state of affairs, however, the medical profession as a whole is not without some responsibility. The lodge doctor is a regular graduated and licensed physician, and if he is not worthy of his title in attainments or character of both, the fact must be ascribed in part, at least, to the failure of his better moralized colleagues to make effective protest against the undue extension of the right to practice. They could do more than anybody else, if they tried, toward clearing their profession of its scandals and its black sheep."

The second editorial is entitled:

Doctors Will Be Dissatisfied."

"Evidently impressed by the vehemence and unanimity with which the English doctors have protested against the inadequacy of the remuneration offered them under the new insurance law, the British Government has increased its appropriation for medical service for the poor by \$5,000,000 per year. This will enable it to pay the selected physicians \$1.80 annually for each insured person intrusted to their care—a considerable advance from the \$1.44 originally offered, but still below the \$2.04, which is the least for which the doctors have been saying they could, would, or should do this work. Even the largest of the amounts seems absurdly small, but, if received from each of a large number of persons, many of whom would go through the year without requiring any treatment at all, it might be something like a living wage. Our own lodge doctors are content with analogous sums, but they are considered disgraces to their profession and they usually are in more important respects, too, than in the acceptance of small fees. The only reasonable plan for the British Government to adopt in carrying out its insurance ideas would be to employ the doctors on fair annual salaries making them public officials, giving all of their time to public service. This is what is done by all countries with respect to army and navy surgeons, and such salaries are accepted by thoroughly efficient men with no loss of professional or personal dignity."

These words are of value in pointing to the necessity of investigating and studying the question in common with other medico-economic questions, in the hope of finding remedies to better the condition

from the united viewpoint of the public and the profession. We can rest assured that both are equally interested in a safe and sane solution of the pressing economic problems of medicine.

The rights of the public and the interest of the profession should be considered in the readjustment of all medico-economic questions; therein the medical profession differs from industrial unions, or organized trusts. Notwithstanding the setbacks in the past the profession is still loyal to its duty to the public and it should be watchful of the duty of the public to the profession. The medical profession in common with other learned professions, has met the tendency of modern times to raise the standard of the educational qualification of professional men, by the adoption, from time to time, of a higher and higher standard of qualification, common to all candidates to be examined for a license to practice medicine in this state. It was natural to believe that it was serving the public by protecting the people of the state from charlatans, quacks and pretenders of all sorts. As a duty of the public to the profession, it expected that the legislature would deny the endorsement of the State, would refuse to license any person as being capable of treating any of the diseases, or abnormalities of the human body, unless such person was able to make a reasonable diagnosis of the human body to do so which requires a full knowledge of the science of medicine as taught in the incorporated medical colleges of the State, which includes the use of drugs, the products of the biological laboratory and other valuable therapeutic agents.

The profession received scant consideration from the people's representatives in Albany, though every reasonable argument was made to show the difference between those persons who act within their legal rights when they accept the ignorant advice so freely given on the highways and byways, in the meeting places and in the drug and instrument shops concerning matters medical. In the other class are those persons who are lured and deceived by the State's endorsement to consult uneducated pseudo specialists in eye abnormalities, or those who diagnose and treat contagious and other diseases by manipulation. The license issued prohibits

them from using such valuable therapeutic agents as drugs, or to perform surgery with instruments. This is certainly a travesty on the higher education in medicine. The duties of the profession to the public are fixed and have become traditional. There are those in the profession who would like to see the practicing physician return to the honorarium for his services, properly called in modern times, a tip. The physician should be grateful that he is no longer a medical missionary. The benefits which the self-sacrificing, yea, suicidal profession, has conferred upon the public, need not be mentioned to an audience like this. They are too well known; but they serve to point out to the profession the neglect of its duty and responsibility in guiding and directing public opinion on the economies of medicine. The duty of the profession to the practicing physician is strong on its negative side, its neglect. It has done nothing to stop the growth of that cancer in the vitals of the practicing physician known as the abuse of medical charity in the hospitals and dispensaries. The profession can stop it. It can make the managers of hospitals and dispensaries stop it; but it must be done through co-operation and loyalty between the profession and the practicing physician which the present medical organization fails, utterly fails to accomplish. Loyalty of the practitioner will be secured if the work of the profession is directed to improving the economic condition of the practicing physician, helping him to fittingly establish himself through post-graduate instruction, teaching him the principles and practice of honorable business, and lessening his unjust and dishonorable competition. The relation of the practicing physician to the profession is too often characterized by indifference and disloyalty, as is shown by the medical staff or board of an institution which has resigned as a protest against some stinging insult on the part of the management. The insolent manner of the trustees is often due to the knowledge that the places can be filled with good physicians, subject only to the delay caused by the great number of applicants for the vacant places. The men who resign the places often bewail the disloyalty of physicians to the profession. They make no mention of the little effort that is made by the profession

to entitle it to the loyalty of the practitioner. Some of the more pressing economic problems that need consideration and action on the part of the united medical profession, organized to effect the reforms it advocates, may be stated as the extension of Board of Health work so as to include the practice of medicine; to the neglect of general sanitation; the inspection of foods, and drugs, below standard, or adulterated; the overtrained nurse taking positions of medical men in defiance of the medical law; fee splitting, and contract practice in so far as it brings discredit on the profession, and practices deceit upon the public. Pseudo-specialists already licensed should be held up to a proper standard of professional conduct or that law should be repealed on account of fraudulent advertising. The abuse of medical charity in the hospitals and dispensaries, which pauperizes and demoralizes, and is a destructive and unjust competition with the legitimate practice of medicine; and many other pressing economic questions too numerous to mention at this time demand a medical society where they can be properly considered and where effective action can be taken. Such a society does not exist in this State to-day. The present scientific organization of the medical profession is practically perfect and can fulfil the purpose of its objects, namely: the advancement of the science of medicine, the promotion of public health and other altruistic activities and the establishment of good fellowship among its selected members. A scientific society is no place to consider the economic condition of the medical profession that needs to be remedied. Its conclusions are too often immature on account of the short time allowed by the by-laws for such matters and furthermore the society is not organized to effect or bring about the reforms it advocates. The time devoted to the discussion of such questions is considered by many of its members as wasted, and rightly so if judged by results. It seems that no progress or reform can be made in the economic condition of medicine unless the economics and the science of medicine are considered in societies differently organized to meet those separate and distinct needs. The Scientific Society may be considered as central and

subjective, the Economic Society as peripheral and objective. Their work starts at opposite ends and moves in opposite directions. Their organization must correspond to their work.

The profession, through the scientific societies of the recognized schools, works for the medical interests of the public altruistically without fear of being misunderstood. But how different it is when the movement is reversed and attention is given to directing the public to work correspondingly for the profession; then we see the advertising quacks and remedy vendors, the food and drug adulterators, and others who should be driven out of their illegitimate business by legislation enacted in the interests of the general public and profession, at work playing the schools against each other and in every other way paralyzing the economic activities of the scientific societies. Such difficulties will be largely avoided in the organization of the new medical society of applied economics, to be started near the people in all the assembly districts of the State. The membership of the scientific society is carefully selected in agreement with the principles of ethics as applied by the society. The membership in the new economic society shall consist of all licensed physicians and will represent the whole profession. All questions of ethics or professional misconduct should be transferred by the new society to the Medical Examining Board and Board of Regents in the interest of the public and the profession.

The equality of members in an economic society as compared with a scientific society will contribute to the loyalty of physicians to each other an essential feature in a society engaged in directing the work of the public for the profession. To that end it is proposed to establish the American Society of Medical Economics, to consist of all the registered practitioners of medicine of the State without regard to their school of practice. The objects of this society shall be:

1. To survey and study all matters of economics that can be practically applied for the benefit of the public health, the betterment of the economic condition of the practicing physician and of the profession of medicine.

2. To advocate and maintain a high standard of medical education and of professional conduct common to all physicians.

3. To consider and perform the duty of the profession to the public in making use of all proper means to expose, suppress and remedy all forms of quackery or dishonorable practice of medicine.

4. To aid the constituted authorities in the enforcement of all medical laws and the laws relating to the sale of pure and standard food and drugs and the accurate compounding and dispensing of medicines.

5. To advocate and secure legislation for the suspension or revocation of the license to practice medicine for causes such as insanity or professional misconduct, the decision to be rendered by the Board of Medical Examiners and the Board of Regents.

6. To aid in the enactment of legislation which shall provide for the revocation of any license to practice medicine or any license issued by the Board of Regents (containing the provision, "not to use drugs" or "The employment of any means other than drugs in the practice"), for causes such as fraudulent advertising or for advertising in a way that is intended to impose upon or deceive ignorant or unsuspecting persons.

7. To investigate and take appropriate action in regard to the practice of all licensed physicians whether they be members of this society or not in so far as the same reflects unfavorably on the profession or the public.

8. To co-operate with other societies with the object of establishing certified pharmacies where prescriptions may be filled with pure and standard drugs as ordered. Illegal counter prescribing to be cared for in the certificate.

9. To oppose all acts tending to encroach upon the practice of medicine, such as legislative enactments establishing pseudo-specialists in medicine and the extension of the work of the Board of Health along the line of clinics and curative medicine instead of extension along the line of preventive medicine, known as general sanitation, inspection and supervision of food and drugs, especially such as are adulterated, contaminated or below standard, and of quarantine.

10. To organize and carry on a campaign against the abuse of medical charity and to co-operate as far as practical with the trustees of the hospitals and dispensaries and with the State Board of Charities.

11. To aid all licensed physicians requiring post-graduate instruction to obtain it in the charity hospitals and dispensaries of the State.

12. To lessen all unjust, illegal and dishonorable competition in the practice of medicine.

The message presented to-night for your discussion is the plan of organization of the American Society of Medical Economics and not the economic questions—these later must be studied, considered and practically applied by the new society. The following is the plan:

There shall be established by the legally registered practitioners of medicine of each of the one hundred and fifty Assembly districts of the State without regard to their school of practice, an Assembly district branch of the American Society of Medical Economics. The branch shall elect a Board of Control of fifteen members to act as an Executive Committee. The sub-division of an Assembly district (made up of the election districts) shall be looked after by supervisors appointed by the Board of Control of the Assembly District Branch. The duties of the Board of Control and of the supervisors shall be to keep themselves informed and to properly record and index all matters which concern the public health and the interest and honor of the practitioner of medicine as outlined in the objects of the society. Each of the fifty Senate District Branches shall consist of forty-five members, which compose the boards of control of the three constituent Assembly District Branches. It shall elect a Governor, a Deputy-Governor, a Recorder, a Bursar, and eleven members to act with the officers as an Executive Council of Fifteen of the Senate District. It shall also elect three delegates (one from each of its Assembly districts) to the General Assembly of the State. It shall appoint committees to work with the State committees and with the board of control and the supervisors of its constituent Assembly District Branches. The State Organization shall consist of a General Assembly

composed of one hundred and fifty delegates, elected to represent the hundred and fifty Assembly Districts of the State, and the Board of Directors, consisting of nine officers and eight chairmen of standing committees.

In order that all matters shall be carefully considered before any action is taken, all orders of the State General Assembly must be approved by a majority of the Governors of the Senate District Branches as provided in the practical referendum. The Senate District Branches may initiate orders which, if approved by the General Assembly of the State, become binding on the society. The American Society of Medical Economics shall organize a National Council, consisting of the representatives from its Branches in the several States and Territories. It may be necessary for this society to teach the profession and the public that there is a just and honorable compensation for medical services, based upon the responsibility, and especially upon the time given to acquire the necessary skill to be applied to the more or less difficult questions or problems involved in the diagnosis and treatment of the patient modified only by consideration of humanity or charity, and also teach the physicians and the public that the abuse of medical charity is a misdemeanor in this State and that they should cease to be accessories in the hope of creating a public and professional sentiment which will uphold the spirit of the law. This new society will be interested in the economic condition of the practicing physician who should be helped to maintain a professional standard of living consistent with his responsibility to his patients and his guardianship of the honor of the profession.

Since this paper was written the society has been incorporated under the name of American Society of Medical Economics, Inc., and the following Board of Directors, consisting of the officers and chairmen of the standing committees, have been elected:

President, E. Eliot Harris; Vice-Presidents, Algernon T. Bristow, William F. Campbell, Smith Ely Jelliffe, Thomas F. Reilly, Theodore K. Tuthill; Secretary, S. Dana Hubbard; Treasurer, Royal S. Copeland; Historian, William J. Cruikshank; Counsel, Atwater & Cruikshank; Chair-

men of Standing Committees—General Economics, L. Pierce Clark; Professional Conduct, J. Richard Kevin; Medical Charities, William S. Thomas; Education and Statistics, Alfred S. Taylor; Legislation, John E. Wilson; Food, Drugs and Sanitation, S. J. Kopetsgy; Ways, Means and Inspection, Russell S. Fowler; Special Business, Irving W. Voorhees.

Discussion.

Dr. William J. Cruikshank, Brooklyn: A century and a quarter ago, there met in Philadelphia a body of men whose purpose and work were without precedent in history. This was the Constitutional Convention, called together to frame for the United States a government that should advance the public welfare, safeguard liberty, and command the respect of the world. The need was great. Four years had passed since the removal of the common cause and common danger which had made the thirteen States one nation, and now the country was "drifting toward anarchy." Jealousy between States was ruining trade at home; inability to retaliate against trade discrimination on the part of England made us the mark of scorn abroad; the country was plunged in financial difficulties, so great that in Massachusetts the distress had caused a rebellion of seven months' duration; the national government could not levy taxes and our credit was gone; we faced what seemed inevitable ruin.

For four months, from May to September, 1787, fifty representatives of thirteen sovereign States debated plans for the establishment of a government that would change this chaotic condition and become a power on the earth. Its sessions were secret, its members bound by a gentleman's agreement not to divulge the proceedings, an agreement so perfectly kept that not until fifty years after were they made public. The names of the men who sat in that convention stir our noblest thoughts, the work they accomplished can only be measured by the achievements of the United States in the past and by the future that awaits us.

With all reverence I point out the analogy. The medical profession, the highest in human service, is itself in a critical period of its history. There is no need to point this out. Every man here is conscious of it, and Dr. E. Eliot Harris

has expressed it most ably. Our business methods are so inadequate that our finances are impaired, and our high standing is threatened by the makeshifts of young practitioners to get a bare living and by unprofessional competition everywhere.

The nation's need in 1787 is the need of the medical profession to-day—organization along economic lines. Our present associations are engaged in the solution of scientific problems and they must continue their great work without interference or interruption; therefore the management of the economics of medicine could well be delegated to a body whose purpose would be to promote the welfare of the profession itself—a purpose by no means narrowly selfish, since whatever enhances the value of a profession increases its efficiency. And just as the Federal Government conserved the government of the States, taking to itself only such functions as could best be exercised by a general body, so a society for the management and control of medical economics would

not weaken nor destroy our existing associations, but would operate to further the good of all. I believe that such a plan as Dr. Harris has outlined would have great results—he calls for a constitutional convention. Let us respond by electing our delegates; let us see that those delegates are our greatest, or best men, our Hamiltons and our Randolphins; and when they frame for us the policy which is deemed best, let us be quick to ratify it that we may realize the full measure of our strength. Just as the elements which made our great nation were present in the chaos that preceded the adoption of the Constitution, so, to-day, the elements are present which can make the medical profession the greatest force for progress, for humanitarianism, for happiness, that the world has known. With those elements properly assembled, we shall become conscious of our own power and dignity. There is nothing in the realm of our activities that is impossible to us if we but “assert ourselves—rise up to our full height.”

ON THE QUESTION OF FOOD POISONING BACTERIA*

By PROFESSOR DR. GEORG MAYER.

Munich.

With your permission I should like to give a short account of some examinations I have made with the help of my assistant, Dr. Mandel.

From January 12 to 15 of last year forty-six soldiers of a regiment of infantry at Munich became sick, forty-one of whom belonged to one company. The symptoms of the disease were those characteristic of acute enteritis with vomiting; all recovered. The common cause was fried fish, coming from a North Sea fishery, ready to be warmed up for eating. On former occasions this fish did no damage, but one box must have been bad. By cultivation on a litmus-lactose medium, a single species of blue colonies grew from the contents of the bowels of twenty-eight patients, who came under examination in the first days of the illness. These colonies did not grow in the incubator, but only at 15 deg. C. They were *Bacillus proteus vulgaris* according to their morphological and biochemical action. The blood of eleven of the diseased agglutinated a standard culture of *proteus* in dilu-

tion of 1 in 25, as did also the blood of the healthy cook of the company, in whose faeces we afterwards found a different bacterium. The controls of the blood of other healthy men proved negative.

In the subsequent investigations of the faeces we found once more in eleven such colonies growing blue; one of the diseased and the cook had them for over six weeks continuously. But only the bacilli of two of the sick persons still showed the same qualities as in the first examination, four had changed, though the variation lay within the limits of the *proteus* group; six typical bacilli no more showed liquefaction of gelatine, five of them had the biochemical qualities of the *B. paratyphosus B.* whilst one seemed to belong to the type of *B. paratyphosus A.* In the further cultivations from the faeces of the diseased two of the *proteus*-like bacilli seemed to have lost the property of liquefying gelatine, one of them acidified the litmus-whey. Two of the five, seeming to be *B. paratyphosus B.*, showed a poor growth in the incubator, one of them being

* A paper read at the Berlin Congress, 1912.

derived from the cook. For further differentiation we used the agglutination by sera made from standard cultures of *B. paratyphosus* A, *B. paratyphosus* B, *B. enteritidis*, *B. proteus vulgaris*, of the freshly isolated cultures resembling *B. paratyphosus* B and *B. paratyphosus* A, and of one bacillus which grew badly in the incubator and was agglutinated by no serum. In the same manner we made the Castellani test, but found no agglutination.

The three cultures morphologically resembling *B. paratyphosus* B proved *B. paratyphosus* B also in serological examination. Two of the four proteus-like strains proved real proteus, the other two and the bacillus resembling *B. paratyphosus* A appeared very strange in serological examination: both the first-named agglutinated with *B. paratyphosus* A serum in a high degree, but the culture which biochemically resembled *B. paratyphosus* A gave no agglutination. A serum, made by the last bacillus, agglutinated only its own strain. We found a similar, strange fact in three lactose non-fermenting bacilli cultivated from the same man, but growing badly in the incubator as mentioned, and in others cultivated from the contents of the bowels of the cook. These bacilli have been agglutinated by no serum, and the sera made by the bacilli themselves agglutinated only the bacillus with which they were produced, though three of them had been obtained from the stools of the same man; a fifth bacillus, cultivated from a man suspected of typhoid fever, showed the same qualities; a bacillus which according to its biochemical properties seemed to be *B. paratyphosus* B was agglutinated only by its own serum.

Now we had occasion to make some further observations which might explain the above-mentioned ones. We examined two other men also sick with enteritis and vomiting. In both we found in the vomited masses a bacillus, biochemically *B. paratyphosus* B, but not agglutinated, whilst the faeces showed similar colonies, which were agglutinated to a very high degree.

We do not think that we say too much in supposing that both are cases of food-poisoning by a bacillus originally not agglutinating, viz., the one found in the vomit. It seems that this bacillus in passing man's bowels has acquired the quality

of being agglutinated by a standard serum. Now you know that the standard bacilli of the usual sera are derived from man; these bacilli must have obtained the property of being agglutinated by the serum of the diseased either before or after coming into the human body. Also the fact is known that often enough we can find in the stools of healthy or sick men, in sausages, mincemeat, dead cattle (not in healthy animals), very commonly in pigs, more seldom in horses, dogs, cats, mice, rats, some bacilli, which by their biochemical reaction, are typical paratyphoid B or enteritidis bacilli, but not agglutinated by our common standard sera. I believe that I am not risking anything in putting forward the theory that these are perhaps bacilli which have not yet adapted themselves to the human body. Perhaps further investigations can cover more clearly the relations between the agglutinating and non-agglutinating types in the sense that we can say: when a paratyphoid bacillus is agglutinated by man's serum then it has previously passed through the body of man.

We made some examinations by feeding mice, rats, rabbits, but the results were not definite; as a rule, the controls died also. Like other investigators, we found in feeding, for example, a proteus bacillus, that the mice had in the blood and stool a true paratyphoid bacillus, which had before been in their bowels, and which became infectious because the mice had been injured by ingestion of the proteus bacillus. We fed a rabbit on a great abundance of a non-agglutinating paratyphoid bacillus for fourteen days, but could not find blue colonies in the stool.

The results of our investigations are, therefore, that the epidemic of food-poisoning was due to *B. proteus vulgaris*; this bacillus disappeared from most of the sick in the first days of the disease, though being in enormous abundance and present in pure culture in the stools; the body has helped itself energetically. In one part of the men there appeared later proteus bacilli of another type, in another part paratyphoid bacilli; each group was for some time present almost in pure culture in the faeces. The belief seems justified that the disease had given these bacilli the chance of growing in abundance in the injured bowels. It is very probable

that in such cases the paratyphoid bacilli are regarded as the infectious agent, if the stools are not examined sufficiently early. I showed in other papers that any alteration of the bowels can produce conditions which facilitate a growth of preponderance of bacteria which otherwise grow so poorly in the faces that we cannot find them by our methods of investigation—but these bacilli are not the primary cause of sickness in these cases, as is often supposed.

The damage done in cases of food poisoning by the proteus and the paratyphoid bacilli, as is shown in the already mentioned epidemic, is not due to the bacteria themselves, but to the poisons produced in the food. The symptoms of the disease itself, which often immediately follow the eating of the food, are the symptoms of poisoning. In the moment when by diarrhoea and vomiting most of the poison is evacuated, the patient recovers, although the bacilli are still in the bowels, and may have penetrated into the blood, as was seen in one of our cases. I found at first, seven years ago, that healthy men can have numerous paratyphoid bacilli in their blood, that these bacilli are excreted by the kidneys, and appear afterwards in the bowels as harmless parasites.

The bacteriemia of paratyphoid bacilli in such cases is no prognostic of disease or danger, but only a secondary phenomenon due to some slight damage of the bowels, which allows the bacilli to enter the blood. Also another of my theses has again been proved in this epidemic; the paratyphoid bacilli are not infectious themselves—we had not one contact infection from the six real paratyphoid "carriers," though we did not attempt isolation. The paratyphoid bacillus requires for causing sickness the mediation of food, where it is able to grow and produce poison. In my ten years' experience of nearly 300 cases and a number of epidemics of paratyphoid infections, I never saw a real contact infection, nor did I ever find another type than the *B. paratyphosus* Schottmuller. It is the paratyphoid bacillus.

A very important question not as yet sufficiently cleared up is often asked:

What steps have we to take against a non-agglutinating paratyphoid bacillus? In the first place I would remark that we usually employ for the agglutination test strains of bacilli derived from the human body and being agglutinated by the serum of the diseased in a high degree. It is said that a genuine paratyphoid bacillus, when found in sausages, milk, water, must agglutinate to the limit of the titre of a highly active serum. I made also seven or eight years ago the first discoveries of such bacilli in milk, in water of pure wells, but these were quite harmless. On the other hand, I found bacilli in sausages, not agglutinating, but surely the cause of most serious sickness. I cultivated such a bacillus in a case from the masses of sausage found in the stomach—the man died four hours after eating the sausage.

And now we again raise the question, which I mentioned before in discussing the discovery of these non-agglutinating bacilli in the vomit of the two men: Might not these non-agglutinating paratyphoid bacilli derived from man under certain circumstances become agglutinable?

And the other question: Did these agglutinating bacilli appearing in man come from man? Then we should have one group which had not passed through man, and another which had passed. And this second group might be more dangerous because it had already passed man, because it is adapted to man, and also is able to resist the natural immunity reactions of the body. And when we find these so-called real paratyphoid bacilli in pigs, in mice, etc., but not damaging man, it is probably because their infectious action on man has been attenuated in passing through animals.

But surely these are only theories; a real progress is not possible without many further exact examinations.

The Bavarian War Department has recently ordered an investigation of the whole garrison of Munich for the different types of paratyphoid bacilli to be carried out, and I hope that I shall be able to make some further communications at the forthcoming International Congress of Medicine in London.

Editorial

An American publication made an attack recently on a new preparation of Park, Davis & Company. We do not intend to discuss the merits or demerits of this medicine, as we have not sufficient data at hand on which to base an opinion. We do know, however, that this firm would never, knowingly, introduce any preparation to the medical profession unless they had the fullest confidence in it. Pioneers in all branches of medicine and pharmacy have to assume great responsibility, and we should not be too hasty in our criticisms, especially when their integrity is above reproach.

The seventh report on the Feeble-Minded in Ontario has just come to hand. On reading it over one wonders why such a condition of affairs is allowed to exist even for a month to say nothing of years. Dr. MacMurchy deserves the greatest credit for her complete survey of this unfortunate class, and we are glad to learn that there is evidence of an awakening of public opinion. The National Council of Women, the Montreal Women's Club, the Women's Institute of Ontario, the City of Toronto, the Canadian Public Health Association, and the press generally are taking an active interest, so we may look for results of a tangible nature during the present year. The greatest misery of these poor people is the responsibility of liberty and they will be happiest when the sense of personal responsibility is taken from them. Imagine the furore which would ensue were we to force our children of four, five or six years into the world to make a living and take care of themselves. Yet this is what we are doing with these feeble-minded. They have the physical development of adults, but mentally are mere children.

Made notable by the presence of H.R.H. the Duke of Connaught, Dr. F. F. Friedmann, the German specialist, who claims to have discovered a serum for the cure and prevention of tuberculosis; Hon. Martin

Burrell, Minister of Agriculture; Hon. Adam Beck, the president, and prominent medical men from many outside points. The annual meeting of the Canadian Association for the Prevention of Tuberculosis was a great success.

Dr. Friedman was given a great ovation when he made his appearance in the theatre and was introduced to His Royal Highness.

H.R.H. the Duke of Connaught emphasized the splendid work that the association was carrying on and spoke particularly of the work of combating the disease as it was brought into the Dominion from foreign countries.

Mayor Ellis in a few words welcomed the convention to Ottawa. Municipalities, he thought, did not perhaps realize to the fullest the importance of such work as was being carried on by the Canadian Association for the Prevention of Tuberculosis. It was just as important to conserve the health of the population as to increase it by fostering immigration.

His worship then referred to the personal service performed by the association's president, Hon. Adam Beck, and went on to speak of the chief features of this year's gathering.

The secretary's report was then read by Dr. G. D. Porter. It showed that the association's work had widened in every province in Canada; sanitariums were being built and the public educated. In Ontario the new Public Health Act making tuberculosis a notifiable disease promised much benefit. If there had been difference of opinions as regards the treatment of tuberculosis there was now practical unanimity as shown by the establishment of local institutions in different municipalities. Open air schools, preventoria and children's clinics were the latest developments and altogether this year was the best in the history of the anti-tuberculosis movement in Canada. In this connection Dr. Porter referred to the active assistance of H.R.H. the Duke of Connaught and closed with the significant statement that prevention of tuberculosis was always better than cure.

H.R.H. the Duke of Connaught then spoke as follows:

"I have attended a great number of meetings and functions, all directed towards the same object, since I have been Governor-General of Canada, and I make no apology for repeating what I have already said on every similar occasion, that is, that to win in this campaign you must interest the public, and by constant and even wearisome reiteration impress on them the fact that the prevention of tuberculosis lies in their own hands, and that by the adoption of simple precautions of hygiene they may save numbers of precious lives and prevent the loss to the development of the Dominion of thousand of hours of work.

"About a thousand immigrants are arriving in Canada daily. Of these a large proportion are children. Extend your membership, interest the public, and let the parents of these immigrant children feel that in coming to Canada the risk of losing their little ones by tuberculosis is negligible, and that on this score, as on many others, they are the gainers by their long journey to take up their existence in a new home.

"I feel that some apology is necessary for referring to the subject on which I now desire to touch, but the fact that this is the last opportunity I shall have for public speaking before I go to England on leave must be my excuse. Also the subject is allied with public health, which is one more reason for me to request your indulgence.

"I desire to refer shortly to the question of your Dominion parks. I do not think that Canada realizes what an asset the nation possesses in the parks. These areas have been preserved from the vandal hand of the builder for the use and enjoyment of the public, who may take their holidays there and keep close to nature under the most comfortable conditions, amassing a store of health which will make them the better able to cope with the strenuous life to which they return after their vacation.

"When deciding on where to take their holidays, Canadians might well consider the claims of places within their own frontier and spend their money in the Dominion instead of carrying it away to swell the millions annually spent in Maine, in Florida, and in California. For I do not believe that any place presents natural attractions greater than those of the parks of Banff, Glacier and Jasper. The time may come when it will be found desirable to establish a national sanatorium at or near one of these reserves, and this would interest your association directly in the success of the parks.

"Recently when visiting the Royal Edward Institute at Montreal I was shown a map of the city, and on this map was marked with a black pin the place of each death which had taken place from tuberculosis. It was a most instructive object-lesson and if it has not already been done I should like to suggest that every city and large town should have similar maps made, photographed, and widely circulated among their children."

Forecast and Review

Use and Abuse of Publicity.

The Journal of the Outdoor Life has always insisted upon the importance of sane and well directed publicity in matters of health. It has regarded the intelligent participation of the patient in his own treatment as not only inevitable but desirable and necessary. The advantages of this newer attitude in medicine have shown themselves most clearly in the field of tuberculosis and have rapidly modified the mutual relation of the physician and layman in other aspects of therapeutics as well. As a matter of fact, it is this new point of view which underlies the great modern health movement and is its chief guarantee of ultimate success.

The possible dangers of the present attitude have just been given an unfortunate expression in the country-wide exploitation of the announcement of a new specific treatment for tuberculosis by Dr. F. F. Friedmann of Berlin. It is too soon at this writing to make any positive statement as to the value, or lack of it, of the reported "discovery." It is not too soon to denounce in unmeasured terms the irresponsibility of the news syndicate which has flooded the country, and particularly the West, with extravagant accounts of the "cures" accomplished in Berlin and which the most casual investigation shows to be still open to question and in the early stages of observation.

While the circumstances attending the announcement and particularly the subsequent developments make an unpleasant impression and are daily acquiring an increasingly commercial tinge, the fact that the work reported seems to fall within the pathological field where we are justified in expecting progress makes it impossible to speak in positive terms. That it contains a contribution of value to phthisiotherapy there is no clear indication.

However this may be, there is no worse cruelty than to rouse false hopes in the army of struggling consumptives, and that

bitter disappointment awaits thousands of eager sufferers is the strong probability in the present instance.

"The Doctors and Advertised Medicines."

An interesting and instructive discussion of the "patent medicine" business recently appeared in the editorial pages of the Philadelphia North American under the above quoted title. The editorial well describes the difficulties which have beset that paper because of its advertising policy. It says that argument and pressure alike have been brought to bear by the "patent medicine" men because it refuses certain kinds of medical advertising and it explains on what grounds the rejection or acceptance of "patent medicine" advertising is based. On the other hand, the North American says that it has received almost as much criticism from the medical profession because it has not excluded all proprietary remedies. But, says the paper, "we believe their [the physicians'] contention that all these remedies are without merit is untrue." Then it propounds this question to the medical profession:

Why is it that a remedy or preparation which the most ethical and conservative of them prescribe, so long as it is advertised only in medical journals, is immediately scouted and condemned by them when it appears among newspaper advertisements?

The answer to this question is that the physician does not condemn a non-habit-forming and non-toxic preparation that is first introduced only to the medical profession via medical journals but later is advertised direct to the public in newspapers, if—and this is a big "if"—the preparation is advertised with the same degree of truthfulness in the daily press as it was advertised in medical journals. To particularize the North American refers to an ointment that a few years ago was advertised only in medical journals but more recently has been widely advertised in the newspapers. The paper says that since the preparation has gone direct to the public

the doctors "have discovered that it is a useless sham." The ointment referred to, doubtless, is Resinol. Our answer to the North American's criticism is a simple one. The objections to Resinol are not that it is advertised in newspapers but that it is advertised fraudulently in newspapers. For instance, when the Resinol advertising was confined to medical journals no such statements were made as: "Resinol heals the worst cases of eczema." Yet this is exactly what has been claimed for this preparation in the newspapers. The outrageous falsity of such claims can be fully appreciated only by physicians who recognize and admit that many cases of eczema baffle the skill of men who have devoted a lifetime to its study.

The North American refers also to "a tonic and nerve food whose name is becoming a household word through advertising." And it says further:

It seems but yesterday that it was recommended by specialists and endorsed by the professional journals. But now that it is urged direct on the public through magazines and newspapers, the doctors tell us that it is only a form of "cottage cheese" utterly without merit.

This statement contains both truth and error. It is true that Sanatogen—the product referred to, of course—has been "recommended" by physicians and "endorsed" by medical journals. And we would say that the same sort of physicians who endorsed it before it was advertised to the public are still endorsing it; and the same sort of medical journals which praised it before it went into lay publications are still praising it—because they are carrying the advertisements themselves. No doctor who had given the matter thought would say that Sanatogen is utterly worthless. In fact, it would be absurd to say that cottage cheese is worthless. What we have said, both at the time that it was advertised only in medical journals and today, is that Sanatogen is advertised under claims that mislead and thereby defraud the public.

The North American holds, and we believe rightly so, that simple home remedies, proprietary or otherwise, are legitimate articles of trade. To illustrate its point, however, the newspaper falls into an

error that is not uncommon. This can best be explained by quoting:

Having consulted our physician for a slight stomach disorder, we received a prescription and had it filled at a cost of 50 cents. The prescription, as it happened, was returned with the bottle of liquid. During a discussion, the paper was shown to an intern in a Philadelphia hospital. He said the formula was very well known; was used by physicians everywhere. And the same thing, he added, was on the market in convenient tablet form, sold under a registered name. We bought a package at a cost of 5 cents. The same remedy from a prescription, with a physician's fee, cost \$2.50.

The fallacy of this argument is evident to every physician and to the average layman. The editor who consulted a doctor for a "slight stomach disorder" may have had merely a passing indigestion or he may have had incipient cancer of the stomach or other serious affection. That he had the former, he learned from the physician. It was for this information, primarily, that he paid his \$2, not for the prescription. Furthermore, even admitting that the prescription was, as the intern said, a well-known one, the intern did not know and could not know that "the same thing, . . . was on the market in convenient tablet form, sold under a registered name." The only man who knows the composition of the "convenient tablet" is the manufacturer of the tablets. Evidently, then, the editorial writer could have had no means of knowing that he was getting "at a cost of five cents" the "same remedy" that was called for by the doctor's prescription. In other words, in the one case the editor obtained an expert opinion on the matter of vital interest to him—his physical condition—and he obtained for the treatment of his condition a preparation whose composition was known. For these, he paid \$2.50. In the other case, he would have obtained, for an unknown—to him—ailment, a box of tablets of unknown composition that might or might not have been of value. If the editor, in this instance, had had an incipient gastric cancer and decided to "treat it" in the cheapest way—by buying five cents' worth of tablets—he would have saved \$2.45 and possibly lost—his life.

While, then, we cannot accept all of the arguments put forth by the North American, we believe that the editorial as a whole is an excellent one. It represents the attitude of the intelligent layman toward the "patent medicine" evil. That the medical profession is responsible for at least a part of the evil we must regretfully admit. The prescribing of unknown preparations has been a practice so common in the profession as to nullify to a large extent all efforts that are being made toward ridding the public of the nostrum evil. We cannot too often assert, however, that the medical profession does not believe that there is no place in commerce for simple home remedies. Neither can the medical profession object to any proprietary preparation solely on the ground that it is advertised in the lay press. What it does object to is the fraudulence that is apparently inseparable from the exploitation of such preparations when sold to the public.—Journal American Medical Association.

Evolution's Message to the Physician.

The recent International Conservation Congress held at Indianapolis, October 4, 1912, unearthed some startling facts that throw a tremendous light upon the problem of the medical profession, showing our shortcomings in relation to those individuals whose lives have been entrusted to our care. These facts are incontrovertable; they are presented to our consideration by a man who is neither physician nor sanitarian; and they are such as should awaken us to the realization that detecting microbes and applying the appropriate remedies to combat them, and diagnosing gross pathological lesions and then cutting out the local manifestation of the diseased individual is not sufficient to meet the demands of an enlightened civilization.

Mr. E. E. Rittenhouse, conservation commissioner for the Equitable Life Assurance Society of the United States, in a paper read before the Conservation Congress said "The life saving movement is still in its infancy. It has been directed so far almost wholly against contagious diseases common to infancy and early adult life, while degenerative diseases of middle life and old age, to which comparatively little attention has been paid, are steadily increasing. The average length of human

life has been increased by increasing the proportion of people living in the younger periods, while the average duration of life of those who pass into middle life and old age has been constantly shortened. The principal items of life waste are due to the hazards, habits, and conditions of life which civilization has introduced."

He further says: "A million and a half people in the United States are constantly suffering from preventable diseases. During the next ten years, over 6,000,000 lives will be needlessly destroyed, if present conditions continue."

Sanitary Experts Demanded.

Now that sanitation and hygiene, especially in their preventive sides or functions have come to be so largely recognized as devolving on public officials ranging upward from municipal to Federal, there is, or ought to be, an urgent demand for men with a thorough training in such work. And, as the New York Medical Journal points out, experts of this sort are not sufficiently numerous to supply the demand, and the consequence is that many of these places fall into the hands of men of qualifications purely political—in other words, of no qualifications at all.

When that disaster, so perilous to community interests, is avoided, the tendency is to intrust tasks like removal of rubbish and ashes, sewage disposal, and street cleaning to engineers rather than to doctors, restricting the activities of Health Boards to direct dealing with disease. Whether this, too, is a calamity may be a matter of opinion, but the Journal, naturally enough, regrets it as not conducive to exalting the profession it represents, and it could with truth be said that the engineering schools have been as slow as the medical to realize the need to make provision to meet the new demand. The graduates of the one, as of the other, have to gain their special knowledge of public sanitation from experience—which is a good way, but necessarily slow and expensive.

In all probability the Journal is right in holding that a medical education is better than one on engineering lines as preparation for a career in public health administration. It therefore advises the medical schools, which with few exceptions

now almost ignore the subject, to add to their curriculums post-graduate courses of at least a year, devoted to teaching laboratory methods, public health principles, sanitary science, vital statistics and practical work. If this were done it might be possible, as in England to insist that the head of every Health Department should have a diploma guaranteeing that he has been properly educated to perform the duties he undertakes.

Health boards, armed with police authority, eradicate the carriers of typhoid and quarantine the victims, but alcohol, a thousand times more destructive to public health than typhoid fever, continues to destroy. Alcoholic degeneracy is the most important sanitary question before the country, yet health authorities do not take action because alcohol is entrenched in politics. We are face to face with the greatest crisis in our country's history. The alcohol question must be settled within the next ten years or some more virile nation will write the epitaph of this republic.—Dr. T. Alexander MacNicholl.

"Well you know glasses are used both over and under the nose. I always use mine over." The special guest at a Philadelphia banquet some years ago, Andrew Carnegie, touched no wine the whole evening. Naturally this aroused considerable curiosity among those present and at length one ventured to ask the famous millionaire if he were an abstainer. Facetiously Mr. Carnegie replied as just quoted, showing that his action on this occasion was but part of his constant practice of strict temperance principles.

However millionaires may be regarded in other respects, unquestionably commercial men of this rank and those of less enormous wealth possess experience of extraordinary character. They have an unusually close acquaintance with the world and its temptations, have keenly observed life in varied phases, thoroughly understand business and know fully the essentials for success. Hence, their views on the personal aspect of the liquor question perforce have great weight. Mr. Carnegie's opinions and practice in regard to the abstinence question, therefore, deserve particular attention.

"Heredity and environment, no matter how good, are of no value after a boy becomes a cigaret smoker," writes D. H. Kress, M.D., in a letter in the Chicago American, in which he states that Teddy Webb, one of the Chicago auto bandits, who has been captured recently, was a confirmed cigaret fiend. Webb is the son of honest parents who aimed to make him a self-respecting citizen. Dr. Kress continues: "By inquiry you will ascertain that all of his youthful companions who took part with him in his holdups were cigaret fiends and probably began the use at an early age. The cigaret, more than any other one thing, is responsible for the present crime wave and for many youthful criminals. The fact is that 95 per cent. of the young fellows who figure in our police courts and enter our reform schools are cigaret smokers and begin their downward career with their use. These facts are well known by judges of juvenile courts and other officials."

The future belongs to the men of clear head, sound judgment and steady nerve. Those weakened by booze will be left behind in the race of competition.—U. S. Senate Document.

On Wrapping Bread.

Exponents of advanced sanitation are objecting to the careless handling of bread made and sold by commercial bakeries, and the bakers admit there is room for improvement. The complaint rests chiefly upon the exposure to contamination in tossing bread about from bakery to wagon and from wagon to stores, and so on.

How can such carelessness inure to sanitation? demands the women and experts.

"It cannot," reply the bakers, "but what are we to do about it?"

"Wrap the loaves with thin paper made for the purpose," rejoin the reformers.

That, however, both the bakers and their critics admit to be an unsatisfactory remedy. For wrapping hot bread tends to confine the heat and moisture gases in the loaf, making it soggy and harder to digest. So here we would have to choose between a poor bread and an unsanitary loaf of bread. If the problem resolves itself down to this we have only to strike a balance, and we shall know just what to do, whether

to go on tossing the loaves around and take chances with dirt or protect the bread from contamination and have a product detrimental to health.

Tremendous progress has been made toward bread-making in clean, sanitary bakeries turning out an even quality of bread with highest nutritive qualities, far superior to hot-or-miss home made varieties. And this matter of safe and sanitary delivery to the ultimate consumer will not remain long open to fault finding.

Women Motorists.

Women motorists are increasing in numbers; and this fact is said to be stimulating manufacturers to build cars with special reference to feminine abilities and limitations, says the *Journal of the American Medical Association*. "Cranking up," has heretofore certainly been a man's work and the chauffeur's fracture, occasioned by this manoeuvre has not been rare. When the self-starter has been perfected, however, as it now promises to be, and becomes simple, inexpensive and reliable, about the last mechanical impediment to a woman's handling her own car will be removed. Even now the clutch, which used to require a man's muscular power to disengage, generally needs only the strength which the average woman can easily exert, and new devices make it possible for women to adjust fires. This suggests a brief discussion of the limitations of motoring for women and the not infrequent sequelae, some of which apply to men as well.

Driving a motor car from April to November should be a healthful recreation, both physical and mental, for many women, provided the exercise be within reasonable limits, speeding being eschewed and the car a runabout or light roadster—one, at any rate, not too heavy for a woman to handle. The "weaker sex" are naturally quick of eye and deft of wrist, two qualifications, aside from sufficient strength, which are needed, it may be said, however, that women are in general more excitable and of less steady judgment than men, shortcomings which may prove disastrous in emergencies, or which might render it advisable to confine motoring efforts to areas outside the crowded portion of the larger cities. The rougher contact of men with the every-day things of life,

their greater participation from boyhood up in sports and athletics generally, better fit them to meet the exigencies of motoring. General athletic training for women and indulgence in sports such as swimming, rowing, tennis or the work of the gymnasium which develop command and co-ordination of muscle and brain, would to an extent supply this lack in women, and no doubt many women with such training may become efficient motorists. It may be possible that it should be limited to women with such training. To them it offers much pleasure and benefit, perhaps, and may be indulged in when the other forms of exercise or sport are unavailable or unsuitable. Rational motoring affords opportunity for plenty of fresh air, with improved appetite and increased zest of life. The ever-changing scenes may soothe and satisfy the emotions, and hitherto unfamiliar aspects of civilization may interest and divert from it tedium.

There is, however, quite a formidable array of troubles, nervous and otherwise, which have been charged against motoring, and which point to the fact that the sport at best is a somewhat strenuous one for women. The ailments for which the motor car may be held reasonable are due almost entirely, however, to speeding and to the fear of accidents which might be engendered as the result of this.

The "auto-eye" is a spasm of the ciliary muscles (which govern accommodations for distances); to this those who have errors of refraction are specially prone; speeding over an unknown country, through devils roads, the sight being constantly and rapidly attracted by objects now near and now in the distance, makes an abnormal strain on the visual mechanism.

Wind and dust, coupled with high speed, induce any degree of conjunctival inflammation, from a hyperemia to a contagious lesion; the wearing of goggles largely obviates this. Auto-leg is a cramp due to sitting in one position for hours, while the veins and muscles are under strain from consecutive shocks and joltings over bad roads.

The sequelae of nerve strain and nerve exhaustion, such as hysteria and neurasthenia, are not rare, especially among young women who motor extensively. Such attacks come on relaxation after strain in

a rapid run over many miles, but they are not ordinarily serious in healthy women; and yet in those not up to par as to their nervous systems, they have grave sequelae. The excitement of motoring may appeal to such women. The ever-increasing stimulation inherent in speeding may sooner or later end in prostration. For such cases entire rest and complete abandonment of motoring are absolutely essential. All women absorbed in motoring should from time to time consult their physicians regarding conditions which they are unable to account for.

Edgar⁹ considers that the unfavorable influence of motoring on pregnancy has been somewhat exaggerated, and that it has in many instances been unfairly set down as abortifacient. The middle third of pregnancy is more liable to be thus affected than any other. Delavan¹⁰ considers that while pulmonary diseases should in theory be much increased by motoring, practically such is not the case; indeed, the car properly used is a valuable therapeutic agent. Nevertheless, acute catarrhs and advanced tuberculosis with abnormal temperature certainly contra-indicate motoring.

Will Make Babies Immune to Tuberculosis.

An interesting experiment for the purpose of creating immunity against tuberculosis is being tried in Pittsburgh under the direction of the Tuberculosis League of that city. Dr. William Charles White, Medical Director of the League, says it will probably take ten years before definite results of the work will be appreciated. The experiment is being conducted on the theory that much, if not all, tuberculosis infection begins in childhood. In view of this fact, the League is aiming to supervise the growth of every baby born for the next ten years in the South Side district of Pittsburgh. The babies and their mothers will be taken in charge at the birth of the infant, and everything possible will be done to increase the resisting power of the child to disease and to make it thereby immune to tuberculous infection. The theory of the Society is that by fortifying the body in the earliest period of a child's life, the infant will, in most cases, become

immune to the diseases, with which heredity and environment may threaten it.

School Luncheon.

The plan of the New York School Lunch Committee merits careful consideration. It is not, as is very often assumed, a plan for giving free lunches to school children. It aims at providing luncheon at cost for such children as need it and will take it, and at organizing the system on such a scale and in such a manner as will enable the actual expenditure to be met by the receipts. The Lunch Committee has been engaged in this kind of work for some five years on its own account, and has a fund of varied and intimate experience which is a practical basis for the general enterprise. It has not found it possible as yet to make the plan self-supporting and at the same time sufficiently attractive to interest those who most require nutrition. But the committee thinks that, worked on a broader scale and with such aid in the way of room and of service as could properly be supplied by the school authorities it would be practicable to "make both ends meet." Purchase of larger quantities of food, cooking larger quantities of like materials, the establishment of central cooking and supply stations, would tend directly to lower prices per unit.

The experiments of the committee have led to the conclusion that a luncheon at 3 cents, with a choice of separate articles of food at 1 cent each, is on the whole the most satisfactory. It provides sufficient nutriment in sufficient variety and meets the tastes as well as the needs of the children. This plan has been tried in seven different schools with good results. About 12 per cent. of the pupils at each school took the lunches and those who did were found to gain in weight at the close of three months three times as much as those not taking them. The effect on the morale of the children is also good. They are more cheerful, active and interested, and very much less prone to truancy.

There is no doubt as to the advantages and benefits of the system. It has its drawbacks. The chief one is that it relieves parents of the need and obligation to provide good and sufficient food for their children. This objection would be less im-

⁹Edgar, J. C.: The Influence of the Automobile on Obstetric and Gynecologic Conditions. *Am. Jour. Obst.*, June, 1911.

¹⁰Delavan, G. B.: The Influence of the Use of the Automobile on the Upper Air Passages. *Med. Rec.*, Aug. 20th, 1910.

portant if the meals could be sold at their actual cost, and the committee hopes that ultimately this can be done. In the meantime it is pointed out that there is a certain number of families who cannot provide the proper food. There is a certain number who will not. Taking into account the general ignorance and indifference, it is probable that only a minority of families can and do provide proper food. These conditions are not exceptional or passing. They have existed for a long time. They tend rather to become worse than better. It is a question for careful study how far they justify the proposed plan.

Sterilization of the Unfit.

During recent years attention has been directed toward the study of eugenics in all parts of our land. The desire and purpose of improving the race in order to produce subsequent generations freed from some of the imperfections and deficiencies existing at the present day, has inspired social workers in all the states to endorse and sustain legislative enactments with this end in view. The hope to prevent the procreation of criminals and various defective offspring has led to the preparation of legislative enactments legally to bring about such results. In the Pacific coast states efforts have been made to obtain legislative action along these lines. A bill has been presented before the House in Olympia, which seems worthy of support of all interested in this sort of endeavor. It provides that no person shall be discharged from a hospital for the insane or institution for the feeble minded until subjected to an operation for sterilization, if in the judgment of the superintendent procreation by such person shall produce children with an inherited tendency to crime, insanity, epilepsy, feeble-mindedness, idiocy and imbecility. It is provided that, if such a person or his relatives believe that he is entitled to a free discharge without such operation, appeal may be made to the superior court, of which the judge shall appoint an examining board of three physicians to determine whether or not his condition is such that he can be safely discharged without the likelihood of producing such character of offspring. If a majority of the board believe that he will

probably produce children with such inherited tendencies, the court shall direct that such person shall not be discharged until the performance of the operation of sterilization. Any one who has made a study of this subject cannot but look with favor upon such a law. In fact, if it were possible to extend its provisions to people outside of such institutions who are liable to produce these classes of unfit offspring, it would be greatly to the improvement of the body politic. Even if this bill be not enacted into law at the present legislative session, its presentation and discussion will have an educational effect which will insure the passage of some such measure at a future date.

What seems an unnecessary bill, bearing on the same subject, has passed the Senate but not the House. It provides that habitual criminals, moral degenerates and sexual perverts in the insane hospitals, penitentiary, hospital for feeble-minded and reform school, on recommendation of the State Board of Health, shall be subjected to such surgical operation as may be "necessary for the protection of the peace, health and safety of the state." It is not clear why those persons are a menace to the state while confined in an institution. Operation under these conditions seems intended as punishment rather than protection to others, but if performed on release from an institution, its protective feature is evident, as provided in the first bill under consideration.—From *North-West Medicine*.

Curing Tuberculosis as an Investment.

Dr. H. L. Barnes, superintendent of the Rhode Island State Sanatorium, has recently demonstrated by some interesting studies of patients discharged as "apparently cured" from that institution, that a sanatorium is a sound investment for any state or city. The gross earnings of 170 ex-patients obtained in 1911 amounted to \$102,752, and those of 211 cases in 1912 to \$112,021. By applying the same average earnings to all ex-patients of the sanatorium living in 1911 and 1912, Dr. Barnes concludes that their income in these two years was \$551,000. This sum is more than three times the cost of maintenance of the sanatorium including interest at 4 per cent

on the original investment and depreciation charges. Dr. Barnes concludes, however, "While institutions for the cure of tuberculosis are good investments, there is good reason for thinking that institutions for the isolation of far advanced cases would be still better investments.

STATE AID AND RACIAL REGENERATION.

At the annual Central Poor Law Conference, held at the Guildhall, E.C., last week, Major Leonard Darwin, President of the Eugenics Education Society, read a paper on "Mental Deficiency." He said that eugenists were endeavoring to ascertain and to inculcate the duties which this generation owed to posterity in the light of their ever-growing knowledge of the laws of heredity. It was true they found remarkable difference between individual brothers, yet if they were to make a study of the relatives of undoubtedly mentally-defective children it would not be a mere probability, but an absolute certainty, that they would find in the ranks of these brothers a much larger proportion of mental defectives than amongst the normal population. This conclusion was not only in accord with all the theories of heredity, but it was confirmed by every statistical inquiry that had ever been made. But if it was a fact as regarded any class that they could foretell that any group of its members would contain an exceptionally large proportion of individuals wholly incapable of fulfilling their part as citizens, did it not appear to be obvious that they ought to endeavor to check the multiplication of that class? He argued that our social system seemed to be designed to actually encourage the appearance of the unborn brothers of the mentally deficient. He contended the lessening of the strain on the parents of defectives by providing State aid must have some tendency to promote the fertility of this class. He contended that their main hopes should rest on the systematic segregation of the feeble-minded children, a method which was bound to lessen the strain on their parents. Then in considering what other methods might be employed in order to purify the race the eugenist saw that his main object must be

to increase the output of children in the upper half of humanity, not actually, but relatively, to the output in the lower half; for in this way the general level would be raised. It had been suggested that this result would be obtained by the State making adequate provision for all mothers and all children who stood in any need of it; for productiveness would thus be encouraged in future amongst the higher types in the same way as it was now being encouraged amongst the lowest. It seemed probable that further State aid, indiscriminate as regarded hereditary qualities would merely increase, and not decrease, the racial harm now being done; and in any case the probable results of such an experiment were so doubtful as to force eugenists to look elsewhere in search of a remedy. It appeared, therefore, that no indirect methods thus far suggested for ridding the race of the curse of mental deficiency were likely to prove effective. Institutional experience proved conclusively that a very large percentage of mental defectives remained remarkably contented under permanent control, however long it lasted, whereas freedom in their case often meant nothing but misery and disgrace. Hence it seemed that their main eugenic hope must for the present rest as regarded mental defect on dealing with the feeble-minded child from infancy onwards in such a way as to prevent procreation when grown up. The large number of the mentally defective maintained under the Poor Law system was a matter of common knowledge, as was also the fact that the authorities are at present powerless to prevent their discharge from time to time and the consequent probability of their reproducing their kind. If the Mental Deficiency Bill became law, and if it were efficiently administered, not only would much eugenic good be accomplished, but the final result would probably be economical as regarded Poor Law expenditure by permanently reducing the number of the mentally and physically defective who had to be cared for.

Has Remedy for Spit Evil.

John A. Mahoney, judge at the Desplaines street police court, has a novel plan to enforce the city ordinance against spitting on the sidewalks. He suggested re-

cently that when a policeman witnessed such an offense he should immediately walk up to the offender and tell him to find a piece of paper and remove the spit from the sidewalk. If he refused the policeman should then arrest him, take him into court and explain the situation to the judge.—Chicago Record-Herald.

Medical Inspection of School Children in Scotland.

The first report on the medical inspection of school children in Scotland, prepared by Dr. W. Leslie Mackenzie, Medical Member of the Local Government Board of Scotland, was issued as a blue book.

After surveying the reports sent in from the different centres, Dr. Mackenzie observes that in the short space of two or three years the medical inspection of school children has become an accepted part of educational administration. This could not have happened so easily or so rapidly if the system of medical inspection had not grown out of a demonstrated social need.

In his general estimate of the results of medical inspection of school children, Dr. Mackenzie remarks that the forecast based on the trial investigations ordered in 1902 by the Royal Commission on Physical Training (Scotland) has been more than justified. What were then regarded as gross exaggerations are now seen to be sober inferences. Under every heading of the elaborate schedule medical inspection has revealed considerable percentages of actual disease, but it has done much more. It has shown that literally in thousands of cases diseased conditions are permitted to develop that, taken in the early stages, could with perfect ease be prevented, that thousands of minor ailments obstructive to education are not considered worth the attention of the doctor, and that in many relations these conditions interfere not only with the education of the children, but with their after efficiency as citizens. Here it is not a question of heredity versus environment; it is a question of considering the elementary decencies and fitnesses of actual life. Systematic inspection is bringing home to the parents the need for early attention and treatment, it is forcing

upwards among all classes the standard of efficiency, it is turning towards the medical institutions a steady stream of cases that five years ago only the wealthier classes of the community found it necessary to consider. It is as yet much too early to expect results that can be satisfactorily estimated except in the crudest way, but it is already obvious that the whole quality of the individual life is beginning to undergo improvement.

Inspection and Treatment.

The question evoked everywhere by this continued output of brute fact is—What is the use of medical inspection without treatment. One use of medical inspection is that it has everywhere evoked this question. Already the city school boards and the county education committees have in many localities instituted a service of nurses. These are engaged in "following up" the cases discovered at the inspections. "Following up" consists as a rule in visiting the homes of the children, in advising the parents to submit the patients to a doctor, in directing them how to carry out the prescribed treatment, and in keeping up the connection between the school and the home. By these methods a great deal of treatment has been effectively secured. There are many defects or diseases that need special treatment, and the special treatment is not always available—either because medical service is too distant or the parent is too poor. "Following up" therefore can do only a part, although it is a part of immense importance. It must be supplemented by new organization.

School Clinics.

In several of the reports the medical officers, finding that the ordinary medical resources are insufficient, suggest the institution of "school clinics." It is hardly open to question that without such clinics the treatment of many urgent conditions and defects cannot be adequately compassed. Recently the Treasury sanctioned an annual grant of £7,500 towards the treatment of conditions found on inspection. The case for such a grant was strong even when medical inspection was begun. The case is enormously strengthened by the facts now recorded. Particularly in the county districts where medical institutions are few and difficult to reach with-

out great sacrifice it will be necessary to provide special service for the treatment of special diseases, for example, diseases of eye and ear. In the cities the problem is much simpler, for even when small surgical operations are necessary these can be arranged for in ways not available in the country. To what extent new institutions and new medical service are necessary each locality must first determine for itself, but the necessity for some extension is abundantly demonstrated.

The general sanitation of the schools, continues the report, is being seriously tackled. Here and there, however, there are signs that the importance of attention to details both in structure and in management is not fully recognized by those immediately in charge. The administrative organizations are well established, and their functions are well understood; all that is necessary is to see that their functions are exercised.

Dirty and Verminous Children.

There are indications that the cleansing of children and disinfection of clothing are being considered, but in spite of what particular localities have done it cannot be said that more than a beginning has been made in the application of the powers of Section 6 of the Education (Scotland) Act, 1908, and of Section 122 of the Children Act. That there should still remain such large percentages of dirty and verminous children is proof that the school authorities have as yet hardly begun to use the large powers they now possess for enforcing the responsibility of the parents and securing the cleanliness both of home and of children. The question of spray baths at school has been discussed by several medical officers, and in one or two localities cleansing has become a real function of school administration. But from the facts already presented it is obvious that the full resources either of the school boards or of the public health authorities have not yet been seriously concentrated on the special problems presented by unclean, verminous and neglected children.

There are many indications in the reports that infectious diseases are on the whole well handled. School epidemics are not "a thing of the past," but they are

with every year passing under better control.

ANTI-VACCINATION ARGUMENTS.

Occasionally the anti-vaccinationists are daring enough to use an illustration near home and of recent date. Of such is the statement that Niagara Falls is unvaccinated and has less smallpox than any city of its size in America.

The facts as to Niagara Falls are these: There is a school board in Niagara Falls which has been dominated by anti-vaccinationists for years. As a result the school population is unvaccinated to an unusual degree. Of course, no open community is 100 per cent. vaccinated or anywhere near it but the percentage of vaccinated pupils is perhaps lower in Niagara Falls than in the average place.

The statement that the community is wholly unvaccinated is of course a gross exaggeration. Niagara Falls, so far from having less smallpox than other towns of its size, has an unproportionate amount—certainly as compared with New York or Chicago per 10,000 population.

Niagara Falls is a good deal of a smallpox plague spot. At a time when I was in Niagara to investigate this question I found some smallpox in school children, a rare state of affairs anywhere in recent years.

Smallpox has been prevalent in Niagara Falls for several weeks, and poor, helpless Niagara Falls is now in the throes of smallpox. The United States public health officer on guard there telegraphed his chief:

"Eight new cases of smallpox in the week ending Feb. 28."

Compare that per thousand population with the same week in New York City.

Niagara Falls is paying for the luxury of having an anti-vaccination school board.

A similar illustration, made in the same loose way and similarly unsupported by quoted facts and figures, is that as to conditions in Leicester, England.

A different line of talk—I think that is the best phrase to use—is the statement that vaccine spreads a lot of diseases.

No more powerful argument against this is needed than the report of the British rural commission made in 1896. After

seven years' study it reported that the dangers of vaccination were insignificant and that such dangers as there are are constantly diminishing. This was true in 1889-1896, before knowledge of infections was broadcast, when points were used, when much arm-to-arm vaccination was done.

The danger at the present time is far less than it was seventeen years ago.—Dr. W. A. Evans.

State Board of Health.

Dr. Rupert Blue, surgeon-general of the United States Public Health Service, in a recent number of the Journal of the American Medical Association, says in regard to the proposed Federal Bureau of Health:

"Much as a strong Bureau of Health is required, the great problem lies in the improvement of the State and local health agencies; in the extension of their powers and the increase of their appropriations. The key to the solution of the problem lies in education; the simultaneous education of both the leaders and the led. The great universities are now providing for the training of competent health officers, and acting in co-operation with the sanitary authorities as teachers of the adult public. No law can be effectively enforced which is not in accord with public sentiment. This has been conclusively demonstrated within recent years in various campaigns for the suppression of epidemic disease in this country. The common schools now teach elementary hygiene; the colleges supplement this earlier instruction with more advanced courses, and these labors will carry us a long way toward the sanitary ideal. The reaping of this harvest is an affair of the future; the immediate and crying need is the enlargement of the score of the State Boards of Health. Next to highly trained officials, the most important thing in a State Health Organization is an efficient laboratory. Laboratories cost money, but every dollar spent on Health Boards should be regarded as an investment, not an expense."

It is the duty of every State Legislature to see that the State Board of Health is adequately supplied with funds; for while the responsibility for an efficient Board rests on the shoulders of the Gov-

ernor, it can do little unless the annual appropriations are sufficient to meet its needs. Many States have established well-equipped and well-conducted laboratories, but there are more which have not yet awakened to the fact that such expense is not an extravagance, but one of the best investments which can be undertaken.

The Rats Must Go.

In many homes the rat does a great deal of damage by eating food supplies, and his board bill is an expensive proposition, so that to-day the rat is undoubtedly the most dangerous and expensive pest that afflicts humanity. He not only destroys millions of dollars' worth of property, but promotes the plague, carrying disease germs and plague-fleas from one part of the work to another. The United States, England, Germany, Japan and other countries have already taken steps to annihilate the rat through action of their health or agricultural departments and every household should co-operate in this work.

The rat is now known to be the chief agent in spreading the bubonic plague, the dread disease that within the past ten years has destroyed millions of human beings in India, China and other Eastern countries and which was only prevented from spreading in the United States by the vigorous work of Surgeon Rupert Blue and his associates in killing off the rats on the Pacific Coast.

The rapidity with which rats multiply is the main reason why there is so little headway in their extermination. More than twenty young rats have been found in a single nest and it is estimated that a single pair of rats and their progeny would, if none was killed, in three years increase to more than ten million.

This is the best time in the whole year to kill off the rats as the cold weather has a tendency to drive rats and mice into the homes and thus concentrate them. Fighting rats is the same as fighting anything else. The enemy should be starved by keeping food supplies in rat proof containers, and killed by an active and effective agent such as a reliable paste that can be bought in handy 25c. packages from almost any druggist, the kind mentioned by the Government in the report on the extermination of rats at San Fran-

ciseo. In selecting the proper poison ask for one that is sold under guarantee of money back if it fails and then in case the rats are not killed off the purchaser can get back his money.

The extermination of rats is a form of health and property insurance which protects the health of the whole community and not only Boards of Health make systematic efforts on a large scale to kill off the rats, but every householder should give his or her personal aid in exterminating this destructive pest. The rat is under sentence of extinction and must go!

The Housing Question.

Under Disraeli, Salisbury and Balfour, laws were framed which enabled municipalities in England to deal effectively with the Housing Problem. For years this good work was carried on in the teeth of opposition which ridiculed the Conservatives for their "policy of sewage." Since 1905 the Liberals have undergone a change of heart and have carried on the work started sixty years ago by Lord Shaftesbury.

The Conservative party in England now has designed to give the central administrative authority power to force municipalities to improve housing conditions in areas under their jurisdiction. This bill also seeks to provide a fund from the Imperial Exchequer to help impoverish municipalities to finance building schemes. To-day Ontario municipalities are looking to a Conservative Government for permission to safeguard the health and lives of their citizens by undertaking work to prevent the growth of slums.

Ontario has got no further than the Torrens' Act which was passed by Disraeli's Government in 1868. Now Toronto asks leave to go as far as the amending and consolidating act passed by the Salisbury Government in 1890. Council wants power to condemn whole slum areas and to build healthful residences for the people dis housed. Before the Government vetoes this proposal, let the members read in the daily press the tragedies and crimes which are a direct result of slum life. Let them study the recent blue book on vital statistics and see for themselves how the lives of Canadian children are being sacrificed so that a few persons may reap wealth

from the degradation and misery of the workers condemned to live in filthy hovels. Let them study the records of European cities and learn how costly in the long run, in money as well as in lives, health and character, is the practice of allowing slums to grow. There can be no excuse for denying to Toronto and other Canadian cities the rights given to municipalities in all other parts of the British Empire.—Toronto News.

Views of Physician Who Would Have Average Man a Centenarian.

Dr. Frank Ellsworth Allard, one of Boston's best-known physicians, has been giving utterance lately to a variety of professional opinions that have attracted a deal of attention in lay circles.

It is Dr. Allard's contention that there is a deal too much of medical legislation and not enough of medical education among the people. He holds the somewhat startling opinion that all disease, of no matter what nature, has its origin in some mental or moral defect in the patient himself or the patient's ancestors.

He does not believe that the serums, to which medical science has devoted so much attention of late, offer a solution to the problem of disease banishment. The prevalence of tuberculosis and many other diseases he brands as a positive disgrace to civilization.

Dr. Allard occupies the chair of physical economies at the Boston University Medical School, and is the medical director of a life insurance company and medical examiner for a number of casualty insurance companies. His specialty is diagnosis to determine human efficiency. He has had 20 years' experience in the practice of his profession, and has spent more than half of that period as a professor at Boston University.

"A good deal of my time has been consumed in examining the bodies of people who are supposed to be well," said Dr. Allard, in an interview with the Sunday Post. "This work has been done in connection with my duties as medical director for a life insurance company. And I have come to the conclusion that the real problem in medicine is what I might term the curing of the well.

"By that I mean to influence the mind of the patient, to make it so well and

strong, that the body becomes its servant and is likewise well and strong. We are really suffering more from the infections of the mind than we are of the body.

"All disease is a process of disintegration. The old Biblical passage about the life of man being three score years and ten is put into our heads at Sunday school and we later accept it as a matter of course. It is unfortunate that we have this limit of life in mind. We ought to live to be 100.

"The modern tendency to legislate people into health is wrong. Of course, we need sanitary regulations. We couldn't very well get along without them, but if the people were better educated in matters pertaining to health we would need fewer statutes and regulations regarding it. And we should be infinitely better off.

"The trouble with doctors and patients alike is that in their search for the abnormal they are apt to lose sight of the normal. Medicine is in a transition period. We are changing from the discovery of disease-cures to methods of seeking the cause of disease and its prevention.

"The human body from a physiological standpoint is a highly sensitive machine, which, if properly built and run, should last at least a century. Civilization is a great disintegrating force, but I believe the time is not far distant when 100 years will be the generally accepted span of life.

"I believe that every disease of every name and nature begins primarily in the breaking of some of nature's laws, and this infraction of the laws is under the guidance of the individual's mentality. I believe that the body may be so trained that it becomes a perfect servant of the will. The keeping of nature's laws is, after all, the most perfect form of morality. The ills we suffer from our lawlessness toward nature are not necessarily a part of our own life history, but if not, then they were in the history of our progenitors a few generations back.

"The medical profession for the past decade has focussed its energy upon the stamping out of contagious and infectious disease, and much has been accomplished. At present the bacteriological laboratories are engaged in the production of serums for this purpose. We now have serums for diphtheria, typhoid and certain blood

diseases, and an alleged serum for tuberculosis.

"But to my way of thinking, we must look to sanitation for the solution of our health problems. Sanitation has so far improved during the past decade that were all this knowledge to be put into practical use by the people, there would be very little sickness in the world. I therefore do not believe that serum discoveries will solve the problem, for we have an unending supply of new cases, where individuals have voluntarily or involuntarily broken some of nature's laws. Medical students are so trained that they naturally seek the abnormal, and young doctors are prone to dwell upon disease as such, instead of looking towards the things that make for health.

"While Massachusetts has perhaps solved many of these problems better than most States, our population to-day contains altogether too large a percentage of defective lives, and there is a grave danger of our State becoming overburdened with institutions. By defective lives I mean those who, from mental, moral or physical reasons, are unable wholly to support themselves.

"It is impossible to determine the exact number of such lives in Massachusetts, but it has been reported that the defective number nearly 1,000,000, or about one-third of our total population. To be sure, the vast majority of these are cases of poverty, but leaving poverty out, which of itself is a form of disease, there are enough of the others to make it look as though the serums were not affording a very rapid solution of the problem. And it is impossible that the too free injection of serums into the bodies of people will increase the number of defectives. A large part of these are defective mentally. Good physical and mental health well directed makes poverty impossible.

"Insurance statistics show that among insured lives of men between the ages of 45 and 55, the death rate is greater than ever before. This applies particularly to business and professional men, notwithstanding the fact that the average expectancy of life has increased about 14 years. The deplorable part of it all is, the period mentioned, between 45 and 55, should be the decade of greatest efficiency.

As a matter of fact this efficiency is constantly lessening.

"I attribute this condition to the high tension under which these men live. The battle for dollars is a strenuous one and it exacts its price. Then, too, our club men, business and professional men eat too much—and drink too much, far too much. They would live longer and accomplish more if they ate less, drank less and indulged in daily periods of rest and recreation. I do not believe in 'vacations,' with long interims between. We should enjoy the real fun of life as we go along.

"Another disintegrating force in life is found in the habits we form. There are thousands of women—and not a few men—in this city whose health is being sapped by the habits of idleness and gossip. These people are lazy, mentally and physically, and their viewpoint on life is purely personal and usually petty. Laziness gives rise to sluggish livers and unhealthy habits of introspection, which in turn breeds neurasthenia and imaginary ills that become real, so far as the sufferings of the patient are concerned.

"The mind should be exercised as well as the body, and thus it comes that gossip, which is a ruse of the mind to distract itself from its own idleness, makes for anything than health. I know of no more pitiful object than the hypochondriac, and it is largely from the gossip and mentally lazy that these defectives are recruited.

"Many physicians who practice among the rich and idle can tell you, if they would, that much of their practice consists in ministering to this class of unfortunates, who are really diseased because they have not sufficient force of will to keep their minds normal and healthy.

"Physicians who examine lives for the big insurance companies pay quite as much attention to what is known as the moral risk as they do the physical aspects of the case. By that is meant the mental poise of the applicant. These physicians have been forced to take cognizance of this element, realizing that it bears importantly upon the general health.

"Tuberculosis is a disgrace to our civilization, so much of it is preventable. Personally, I believe that it is a social rather than a bacteriological problem. In many cases it begins in defective breathing. It is hastened by defective living and lack

of great elements of organic life, proper food, air, sleep and exercise.

"Intemperance in the use of alcoholic stimulants is perhaps the greatest curse of our age. It is largely mental disease forced downward by the abnormal cravings of a perverted body. The whole problem of drunkenness should be dealt with as a mental affliction—a weakening of the will. Such sufferers should be protected from themselves, but not by confinement in jail. In spite of religious teachings and the restraint of law, drunkenness is on the increase and in this, too, we have a social problem. It breaks down the moral and physical fibre and drags behind it a train of filthy diseases.

"Owners of automobiles are getting so they will not employ a chauffeur who drinks, and the tendency of all employers of labor is to hire the temperate man because of his immeasurably greater efficiency and dependability. If this attitude were to become more nearly universal the temperance question would be solved in a few years.

"The law has attempted to deal with this problem for generations, ineffectually. The individual must be made to see that excessive drinking does not pay, mentally, physically or materially. The ideal cure for this class of defectives would be some system whereby the patient receives sympathetic mental treatment, coupled with sequestration for a time under circumstances that would permit of plenty of exercise in the open air.

"We should cease to sermonize. It is the will that needs stimulation. The drunkard must be made to realize that his excesses are a crime against his own body, to say nothing of the destruction of the finer impulses of life.

"Patent and proprietary medicines are another great source of disintegration. It is estimated that there are at least 6,000 persons in this State hopelessly addicted to various forms of the drug habit, such as cocaine, opium and its derivatives, and the medicines that contain them. The sale of patent and proprietary medicines for internal use should be prohibited by law. Some great physicians deny the existence of any specifics in medicine, and if they exist they can be counted on the fingers one hand.

"The old-time practitioner is therefore bound to pass. The family doctor, as we know him to-day is doomed to extinction. His place will be taken by the physician who will fulfil the real meaning of the word, which is 'teacher.' He will teach men how to avoid disease and keep healthy. In the future there will be relatively few physicians in practice, because there will be no need of them."

Public Health Week.

Public health depends on education. Unless the people appreciate the need for maintaining sanitary conditions throughout the community, the passing of legislation can be of no avail. Consequently, every effort that is put forth to enlighten public opinion in this very vital matter should receive undivided encouragement.

An interesting experiment in this line was tried in Great Britain last year. A National Health Week was promoted and the results were so satisfactory that it will probably remain an annual institution. The National Health Week Committee outlined the general programme for the week, but the details were worked out by local committees. This made it possible to take the greatest advantage of local possibilities. Thus some schools were more highly trained than others, and the scholars from these were enlisted to give gymnastic and other displays, which demonstrated one branch of physical training for the young. In other places Medical Health Officers, Sanitary Inspectors and nurses gave valuable assistance, and their "popular talks" on health matters were listened to with great interest and profit. Again by means of sermons in churches, addresses in Sunday Schools, addresses to school children by their own teachers throughout the week; the use of health films in the moving picture shows; having rate-payers visit the water, gas and sewage work of the municipality; and by carrying on demonstrations in nursing and cooking very many people were made to understand something of the meaning and value of health.

Of course, it may be urged that such spasmodic efforts are apt to have mere transitory results, and that, to be effective, the work must be continuous. But it is well to remember that it is often neces-

sary to shout to awaken a sleeping man, and even wide awake people are interested by the unusual.

While no central organization exists in Canada for carrying out a National Health Week programme, it should be feasible for many municipalities to accomplish such a task. And the spring season, when the snow has melted and uncovered the refuse of months, is the time for such work. Health and cleanliness go hand in hand.—A. D.

The Physiology of Bathing.

One of the most practical and instructive contributions made to the International Conference on School and Public Baths held in Schevingen last autumn was that on the physiology of bathing, by Dr. R. Fortescue Fox, a former president of the Balneological and Climatological Society of Great Britain. The use of baths both for the preservation of health and for the cure of disease is of great antiquity, yet until recent years bathing has been carried on quite empirically and without any thought of its scientific aspect. The indication of good from a cold bath has been the sense of warmth and glow on stepping out of it, and the contra-indication the sensation of "goose flesh." Beyond this the general public know but very little. The reaction which is so pleasant after a cold plunge is increased, Dr. Fox tells us, when the bather is warm before entering the bath, and when the cold is rapidly applied, and cool or cold baths when systematically employed educate the natural reaction to cold and greatly increase the resistance of the body to fluctuations of external temperature. It is for this reason, no doubt, that a cold bath in the early morning ensures a feeling of warmth for the remainder of the day. The cold "morning tub" is not only a good mental and physical tonic for young and healthy subjects in winter as well as in summer, but its educative effect is seen in the cultivation of will power. After a warm bath cold should always be applied, and in school life the ideal bath is a brief shower, first hot and then cold, and taken when warm after vigorous exercise. A few years ago it was the fashion in some quarters to advocate the taking of very hot baths, following the custom of the Japanese, but,

however well these may be adapted to the climate of Japan they cannot be taken with impunity in the British Isles, for, as Dr. Fox rightly points out, they are at first stimulating, but very easily becoming depressing. In many, even in young persons, the action of the heart is quickly affected, and dangerous weakness, may supervene several hours after leaving the bath. When prolonged beyond a brief period hot baths temporarily lower the tone of the circulation, the muscles and the nerve centres, and when habitually used they produce a permanent condition of mental and physical debility. The habit of taking frequent and prolonged hot baths is especially injurious to young persons, and should be discouraged. Dr. Fox states that one of the causes sometimes said to have contributed to the downfall of the Roman power was the fondness of the Romans for warm baths. Regular bathing is of such supreme importance that it is eminently desirable it should be carried out properly in order that it should not be brought into disrepute by any untoward results. For this reason we have given prominence to Dr. Fox's paper, which appeared in full in the December number of the *Clinical Journal*.

Balkan Campaign.

At the beginning of the campaign the medical service of the Bulgarian army was not perfectly organized; it was wanting in experience and had not fully realized the importance of hygienic precautions against disease. Later on, bacteriologists were obtained from other countries, and under their guidance energetic sanitary measures were carried out. Although almost every doctor in the country was called up for service the number was still much below the requirements of the army. Each infantry regiment of 4,000 men should have had one senior medical officer and one medical officer with each battalion; as a rule, however, there were only two medical officers in place of the four. At divisional headquarters there were as many as six medical officers including sanitary specialists, whose services were available whenever help was required.

The main dressing stations were established by the senior medical officers of

regiments. To be out of range these had to be located at a distance of $2\frac{1}{2}$ miles behind the firing line. Each company had one "feldsher" (dresser) and four stretcher-bearers. The position of the dressing stations was shifted to conform to the movements of the troops; the field hospitals which were located some 6 miles in rear of the fighting line remained stationary. They were generally established in buildings and only when buildings were not available were tents made use of. The field hospitals had no beds and only a scanty hospital equipment; patients were accommodated on stretchers or on straw on the floor.

Each regiment was accompanied by one wagon for medical stores and each battalion by one ambulance wagon; the field hospital marched in rear of the division. On account of the bad roads, regiments were unable to use their heavy ambulance wagons and they were merely employed to transport sick from the railway stations to the base hospitals. Country wagons were employed with the troops for the transport of wounded; buffalo teams were found most satisfactory owing to their steadiness. The objections to ox wagons are that they cannot cover more than 10 miles in a day and that each cart can only take one severely wounded man.

At the beginning of the campaign an attempt was made to evacuate the severely wounded men as soon as possible in order to get them into the well-equipped base hospitals; so many died on the road that this plan had to be abandoned.

The supply service worked well and food was always obtainable in the field hospitals. Slightly wounded men received the same daily rations as the soldiers, viz., 1 kg. bread, 400 grm. of dried meat, 100 grm. of rice, beans or lentils or 200 grm. of potatoes, 50 grm. of dried plums, 50 grm. of butter or fat, 3 grm. of red pepper, 20 grm. of salt, 50 grm. of flour, 35 grm. of sugar. Alcohol was only issued on rare occasions; when the troops were exhausted a ration of 62 grm. (about $2\frac{1}{2}$ oz.) of Schnapps (Hollands) was ordered.

The wounded were evacuated from field hospitals to stationary hospitals on the line of communication as quickly as possible; severely wounded were left in the latter till fit to proceed. The stationary hospitals were often five or six days'

journey from the railway line. The fittings of the Bulgarian ambulance trains were somewhat primitive. The base hospitals in the larger cities were well equipped, thanks to the personal exertions of the Queen. Schools, clubs, etc., were taken over and fitted up as hospitals. The internal economy was managed by Bulgarians, while most of the medical work was carried out by foreign Red Cross personnel. Bulgarian ladies made excellent assistants to the trained Red Cross sisters. Convoys of wounded were timed to arrive during the night so that the populace should see as little of them as possible. As the lighting arrangements were usually bad, no surgical work could be undertaken till the following day.

Only a few of the troops had first field dressings, and those did not understand how to use them. Some regimental surgeons had purchased a French pattern of first field dressing for their units. Some of the wounded arrived at the dressing station holding the unopened first field dressing firmly on to the wound thinking that it was intended to be used as a compress to arrest hæmorrhage. Some regiments had been supplied with cotton bandages which the men carried loose in their pockets, so that when used they were in a soiled condition. Cavalry men carried a dressing in their wallets; when wounded the men were not able to get at their dressing. Many wounds were not dressed for several days.

The supply of splints was deficient; many cases of fracture had to be transported long distances before the fracture was properly immobilized.

A good deal of faulty wound surgery was noted; dressings were in some cases too frequently changed, in others the wound had originally been plugged; about 40 per cent. of all wounds suppurated; this unsatisfactory result was no doubt largely due to the long and uncomfortable transport to which the wounded were subjected.

On mobilization the men were fit and in hard condition, so that during the advance there was little sickness. When the army became stationary epidemics of dysentery and typhoid fever began. These were no doubt largely due to the drinking of unboiled water by the troops. Later on, cholera was imported by the Turkish

prisoners and spread by the drivers of transport columns. Thanks to the work of the Viennese bacteriologists and strict isolation of infected persons the epidemic was speedily controlled.

The Bulgarian army surgeons worked hard and well, the real trouble was that there were not enough of them.

Fighting the Fly.

The fly is a nuisance beside being a carrier of infectious diseases, and the attempt to exterminate it needs no justification. How one can make one's home, town or city flyless is described by Dr. C. F. Hodge of Clark university, Worcester, Mass. He says that the American public spends \$10,000,000 a year for window and door screens in a futile attempt to exclude a lively insect which insists on getting into the house every time the doors are opened. He believes also that the method of swatting the flies, using fly-paper or indoor traps or poisons is ineffective, but may help. His method is to make use in various ways of the conical wire-mesh fly-trap, which is familiar to almost every one, in such a way as to turn the tables on the flies and "put them in jail and let ourselves out." The plan involves, of course, the abolition as far as possible of all breeding and feeding places for flies and the application of the flytrap mentioned above to the garbage can, to the screens on windows, to the covers on manure bins, etc., all of which can be done by a little mechanical ingenuity.

Garbage cans are on the market which have a cover larger than the can and not fitting down closely on it so that the flies gain access to the can under the cover and escape through a hole in the cover over which is fixed a flytrap. In fighting the fly Dr. Hodge has found that the essentials of a successful campaign are to transfer the fight against the fly from the house to outside doors, and then to exterminate it. Another essential feature in a town or city is that households must co-operate. One ignorant or careless home can breed flies enough to vitiate the best endeavours of a whole town. Hodge has succeeded in his neighborhood in practically eliminating flies; he uses no screen in windows and doors, and can sit out doors or have windows or doors open at any time

without molestation. As flies begin to breed early in the spring and as they breed with marvelous rapidity, the time to arrange for a fly campaign is in the winter.

A Tuberculosis Sanatorium as a Health Resort.

There are good reasons to consider a well regulated sanatorium or a tuberculosis resort a much safer place of residence for healthy people than the average city, says the Saranac Lake Society for the Control of Tuberculosis in a recent publication. New cases of tuberculosis, according to statistics, seem to develop less often among the residential population of health resorts such as Saranac Lake, than in ordinary towns of the same size. Some of the reasons which may be assigned for this slight danger of infection are: (1) Because the majority of tuberculosis patients in a resort take precautions often neglected at home. (2) Because the patients are for the most part out of doors where they cannot so easily convey infection. (3) Because the breath of the consumptive does not contain germs. (4) Because persons in normal health, when living under favorable climatic conditions, have a strong natural resistance to tuberculosis.

What is Difference Between a Serum and a Vaccine?

"The Nature of Vaccines. Sera and Tuberculins with Special Reference to their Use in the Treatment of Tuberculosis" is the title of a timely article which will appear in the April number of the *Journal of the Outdoor Life*, the *Anti-Tuberculosis Magazine* (New York). The article is written by a well known authority on clinical pathology.

The author states that the use of bacteriological preparations, such as vaccines and sera is twofold, both for the purpose of producing immunity against certain diseases and also for the purpose of assisting in the cure of certain disease processes. They are used both upon healthy and upon sick persons.

A serum may be defined as a fluid separated from the clot of the blood of some animal which has previously been immunized against the germ or poison of a certain disease such as diphtheria, or hay fever. It is administered to cure a disease process in

the human body after the disease has already developed and is not designed as a preventive.

A vaccine on the other hand is a weakened poison or virus of a certain disease such as smallpox or hydrophobia, which is taken from a calf or some other animal afflicted with the disease in question. During the process of the disease in the animal, the poison which the germs of the disease cast off, becomes attenuated. Then, when it is inoculated into the human body a protective reaction of the healthy tissues against this poison follows and an immunity against the disease is thus produced. A vaccine of this character is designed for use only in a healthy body and is not for use after the active symptoms of the disease appear.

The term vaccine is also used in some cases to apply to attenuated germs which have been weakened, usually by heating or otherwise. These preparations are also called "bacterial-vaccines," or bacterins, in distinction from virus-vaccines. These bacterial-vaccines are employed not only for inoculating the healthy individual in order to protect against infectious disease, such as typhoid fever, the plague, or tuberculosis, but also for inoculating the diseased body in order to stimulate the production of protective substances when the processes of nature apparently are not working sufficiently actively toward recovery.

Tuberculin, of which there are a considerable number of varieties, is a preparation made from the germs of tuberculosis, so treated that the poison ordinarily produced by these bacilli is killed or rendered innocuous. Tuberculin is really a distinct kind of bacterial vaccine used in the treatment of tuberculosis, and has been employed both for therapeutic and preventive purposes.

Demands for assistance in making social surveys have been coming to the new Department of Surveys and Exhibits of the Russell Sage Foundation, which opened last October, in such large numbers that the department has found it necessary to add two new members to its staff. In its first three months the Department's activities have been largely advisory—defining surveys by specific illustrations, outlining the first steps toward the organization of

of barbaric and primitive races, amulets, representative backing groups for both surveys and exhibits, assisting in the selection of subjects to be covered, estimating probable costs and planning the field work. This work is to be extended and greater opportunity for field work will be provided by the new staff assistants. The men are Zenas L. Potter of New York, and Franz Schneider, Jr., of Boston.

Mr. Potter specialized in government problems at the University of Minnesota, and later spent a year at Columbia in graduate work in Economics and Social Economy, receiving the Toppan prize for the best work in constitutional law. He was Field Secretary, New York Child Labor Committee for two years, investigating work conditions of children in the state, and in 1912 he directed the cannery investigation for the New York State Factory Investigating Commission. The findings of this investigation are being used in the campaign for better laws regulating child labor conditions in New York State. Mr. Potter also assisted in the Syracuse preliminary survey and in the exhibit held in connection with the Syracuse know-your-city-week.

Mr. Schneider will leave the position of Research Associate in the Sanitary Research Laboratories of the Massachusetts Institute of Technology to take up work with the Department of Surveys and Exhibits. In courses leading to his bachelor's and master's degrees at the Institute, Mr. Schneider specialized in the field of public health and sanitation.

While teaching he has engaged also in considerable outside work, being employed in the summer of 1911 in Kansas on special investigations into the bacteriology of the egg packing industry, and during the summer of 1912 on an investigation into the fundamental principles of ventilation. For the last year he has helped edit the American Journal of Public Health, and at present is health officer in Wellesley, Mass. The latter work is part of a plan being worked out with Prof. W. B. Phelps, also of the Institute, to build up an organization to operate the Board of Health work of small towns in the neighborhood of Boston, the aim being to give these towns a service comparable to that of the large cities, a service which they alone could not afford.

MEETINGS AND REPORTS

The Conference of Charities and Corrections will meet in Winnipeg on September 13th-17th inclusive. An outline of the programme will be published later.

The National Association for the Prevention of Tuberculosis will meet in Washington, D.C., May 5th and 6th.

The American Sanatorium Association will hold a meeting on the day preceding the meeting of the National Association, as will also the Association of Tuberculosis Secretaries, which is arranging a program of particular interest to those actively concerned in directing State and local campaigns against the disease.

The International Medical Congress will meet this year in London, for the first time in twenty-one years. Among the many features of interest will be the museum, which is being organized by a committee under the leadership of Professor A. Keith, of the Royal College of Surgeons. The museum will consist of exhibits illustrating subjects to be discussed in the various sections, together with such other material as the committee may deem of sufficient interest; it will be housed in the Imperial College of Science, South Kensington, and, if thought advisable, it will be kept open for a few days after the congress has ended. The honorary secretary of the museum committee is H. W. Armit, Ravenhurst, Talbot Road, Wembley, and medical practitioners and scientists who are willing to place at the disposal of the committee material illustrative of recent advances in medical science, are requested to communicate with him. Expenses of transit will be defrayed and the exhibits insured against damage or loss, and returned in good condition. Exhibitors will be invited to hold demonstrations in the museum on their own specimens.

A second feature of unusual interest will be an exhibition of rare and curious objects relating to medicine, chemistry, pharmacy, and the allied sciences, which is being organized by Mr. Henry S. Wellcome. This will be one of the most interesting collections of historical medical objects ever displayed, and will include medical deities

talismans, and charms connected with the art of healing, and specimens of instruments used in every part of the world, while an attempt will be made to trace the evolution of the surgical instruments in use at the present day. Models of ancient pharmacies and laboratories, relics of the practice of alchemy, and specimens of ancient and unusual materia medica will also be shown.

School Hygiene Meeting.

The fourth annual congress on school hygiene will be held this year in Buffalo and August 25-30 are the dates set.

Delegates will be present from thirty-two nations, from every province in the Dominion, and every state in the union. Invitations have been sent to 300 colleges to send representatives, and an interesting exhibit of school rooms, etc., will be presented.

Dr. Helen MacMurchy is to speak on the subject of "Can the Mentally Deficient Child be Educated in the Public School?"

The Ontario Committee consists of: Dr. Charles A. Hodgetts, chairman, Ottawa; Dr. T. W. G. McKay, secretary, Oshawa; Dr. W. E. Struthers, Toronto; Dr. F. S. Ruttan, Woodstock; Dr. A. P. Knight, Kingston; Dr. C. N. Lawrie, Port Arthur; Dr. A. W. MacPherson, Peterboro; Dr. Dickinson, Port Hope.

Toronto members are: Henry W. Auden of U.C.C.; Miss C. C. Benson, W. E. Chapman, Miss A. Coleman, Mr. A. H. O. Colquhoun, Mr. R. H. Cowley, Mr. L. E. Embree, Mr. J. Ross Robertson, Dr. J. Fleming Goodchild, James L. Hughes, Rev. D. Bruce Macdonald, Dr. Helen MacMurchy, Dr. J. W. S. McCullough, Mr. T. W. Merchant, Miss H. Nainby.

Provincial Board of Health.

The annual meeting of the Ontario Health Officers' Association will be held in the Parliament Buildings, Toronto, May 29th and 30th, at which all the medical officers in the Province are required to attend as provided in Section 42 of the Public Health Act.

Arrangements are being made for reduced rates on the principal lines of railway, and a large attendance is expected. The program will be issued at an early date.

A. H. Wright, M.D., President; J. W. S. McCullough, M.D., Secretary.

The Colorado Springs Meeting.

The 1913 meetings of the American Public Health Association are to be held in Colorado Springs, September 9th to 13th inclusive. This will be the first time that the Association has assembled in this beautiful city and it behooves members to make their plans well ahead so that they may be able to be in attendance. There is no finer place than Colorado Springs and vicinity in which to spend one's vacation, and it is sincerely hoped that the splendid showing of the Association at the September 1912 meetings in Washington, will be equalled.

The Program Committees have already started on the preparation of strong and attractive programs for the General Sessions and the Section Meetings.

Past experience has demonstrated the value of well thought out and executed symposia on topics of immediate importance and the secretary of the association will appreciate suggestions from members as to subjects which are adapted to such discussion at the meetings.

The following gentlemen act as chairmen of the program committees and would be glad to receive suggestions at an early date concerning subjects for consideration: General Sessions, Professor S. M. Gunn, 755 Boylston street, Boston, Mass.; Laboratory Section, Professor Edward Bartow, University of Illinois, Urbana, Illinois; Section on Vital Statistics, Doctor J. E. Monjaras, Mexico, D.F., Mexico; Municipal Health Officers' Section, Dr. John H. Landis, Health Officer, Cincinnati, Ohio; Sanitary Engineering Section, Mr. R. S. Weston, 14 Beacon street, Boston, Mass.; Sociological Section, Dr. H. E. Dearholt, Goldsmith Building, Milwaukee, Wis.

Summer Course in Municipal Sanitation at Harvard University.

During the six weeks from June 30 to August 9, Harvard University will offer a group of courses relating to the general subject of municipal hygiene and sanitation. It is expected that these courses will prove of especial value to public health officers, students of municipal government and others wishing to obtain a practical de-

monstration of the principles of sanitation applied to actual problems.

There will be thirty-six lectures by Prof. George C. Whipple on Municipal Sanitation, covering various topics relating to water supply, sewerage, air, garbage, etc., twelve lectures on Vital Statistics by Professor Whipple and Mr. Sylvester Schattschneider, and twelve lectures on Sanitary Biology by Dr. John W. M. Bunker. There will also be a series of field excursions to various places of sanitary interest in the vicinity of Boston for purposes of practical work and a series of exercises in the sanitary engineering laboratory at Pierce Hall.

The tuition fee is but \$30, with an additional laboratory fee of \$10. A bulletin descriptive of the course may be obtained by addressing Prof. George C. Whipple, at Pierce Hall, Cambridge, Mass.

"The spring clinic of the American Association of Official Surgeons will be held in the Surgical Amphitheatre of Hering Medical College, corner of Wood and York streets, Chicago, Ill., April 23-4-5-6. Dr. E. H. Pratt, A.M., M.D., LL.D., and assistants will operate on clinical patients, demonstrating the fundamental principles of official surgery as applied in the treatment of chronic diseases and as an adjunct to major surgery in general.

On April 26th, the fourth and last day of the clinic Dr. Pratt and assistants will demonstrate other therapeutic measures which have been recently introduced to the medical profession, including abdominal calisthenics, manual therapeutics, high frequency treatment of internal organs, spondylotherapy and new hydro-therapeutic measures. These measures will be introduced and demonstrated not as curative measures within themselves alone, but as adjuncts to the ordinary armamentarium of the physician.

Tuition to this clinical course is free to all practising physicians, medical students and nurses.

Physicians are invited to bring clinical cases for operation. No operating fee will be charged. Excellent hospital accommodations will be provided. Opportunity will be presented for the physicians bringing clinical cases to assist personally in the operation.

The clinic headquarters will be the Hotel La Salle where reservations may be made in advance. For further information address the secretary of the Association, W. A. Guild, Des Moines, Iowa.

BOOK REVIEWS

Dr. John W. S. McCullough, the Provincial Health Officer for Ontario, has issued a Physician's Pocket Reference Book in which the various causes of death are classified in accordance with the agreement arrived at during the conference of the International Commission for the Revision of the Classification of Diseases and Causes of Deaths, which was called by the French Government in July, 1909.

Twenty countries were represented. It is of the utmost importance for statistical purposes, that more definite terms be used than at present. The causes of death are classified under the following heads:

1. General Diseases.
2. Diseases of the Nervous System and of the Organs of Special Sense.
3. Diseases of the Circulatory System.
4. Diseases of the Respiratory System.
5. Diseases of the Digestive System.
6. Non-Venereal Diseases of the Genito Urinary System and Annexa.
7. The Puerperal State.
8. Diseases of the Skin and Cellular Tissue.
9. Diseases of the Bones and Organs of Locomotion.
10. Malformation.
11. Diseases of Early Infancy.
12. Senility.
13. Affections Produced by External Causes.
14. Ill-defined Diseases.

The physician in reporting a death is requested to enter:

1. The name of the disease causing death.
2. The name of the contributory cause, if any.
3. The duration of each cause.

In naming the causes of death it is urgently recommended that the exact names printed in bold faced type in the list be employed. Physicians may obtain this booklet free of charge by writing Dr. McCullough, and they will find it a great convenience.

